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T. BUTTERFIELD,

Minister of Agriculture.

POINTS FOR PRODUCERS.

Raw Rock Phosphates.

Included in the permanent experimental work being conducted on the Government Experimental Farm, Kybybolite, is a series of plots laid down with the object of testing the agricultural value of raw rock phosphates. This substance is being tested as an application to crops to be harvested, and also, natural pastures. To ascertain its value on crops to be harvested, tests were established in 1919 and continued each year since. Low grade rock is being used. The different types of rock contain respectively, (a) calcium phosphate, and (b) aluminium phosphate equal to about 18 per cent. of phosphoric acid. A rotation consisting of wheat (for hay), peas, in which both the wheat and the pea crops are dressed with the same fertilisers, is being practised on some of the poorest land on the farm. The average results secured during the past five years from different crops are as follows:—

Raw Rock Phosphates Tests on Wheaten Hay—Peas Rotation, Wheaten Hay Yields, 1919-1923.

Plot.	Manuring Per Acre.	Means 1919-1923.		
		T.	C.	L.
No. 1. No manure		0	10	85
No. 2. 5cwts. lime and 1cwt. super		1	4	109
No. 3. 1cwt. super		0	19	8
No. 4. 1cwt. aluminium rock phosphate		0	16	68
No. 5. 1cwt. calcium rock phosphate		0	14	1

Pea Yields, 1919-1923.

Plot.	Manuring Per Acre.	Means 1919-1923.	
		B.	L.
No. 1. No manure		2	19
No. 2. 5cwts. lime and 1cwt. super		5	33
No. 3. 1cwt. super		4	43
No. 4. 1cwt. aluminium rock phosphate		4	8
No. 5. 1cwt. calcium rock phosphate		3	2

The same two rock phosphates are also being tested on natural pastures on plots 3½ acres in area. The grazing capacity of the resulting growth estimated in terms of sheep per acre per annum for the past three years is set out as follows:—

Plot No. 1.—Manured with 1 ton of aluminium phosphate in 1919, and subsequently unmanured, carried 1.63 sheep per acre.

Plot No. 2.—Manured with 11cwts. aluminium phosphate in 1919, and with 1cwt. of the same substance per acre per annum subsequently, carried 1.45 per sheep per acre per annum.

Plot No. 3.—Manured with 1 ton lime and 1cwt. super in 1919, and 1cwt. super per acre per annum subsequently, carried 2.13 sheep per acre per annum.

Plot No. 4.—Manured with 11cwts. calcium phosphate in 1919, and 1cwt. calcium phosphate per acre per annum subsequently, carried 1.34 sheep per acre per annum.

Plot No. 5.—Manured with 1 ton calcium phosphate in 1919, and not subsequently manured, carried 1.38 sheep per acre per annum.

Plot No. 6.—Which received no manure, carried 0.91 sheep per acre per annum.

During the season 1923/24, the plots were grazed simultaneously with comparatively small flocks of sheep during July, August, October, November, December, and January. Plot No. 3 stood out in contrast to the others during the whole season, producing earlier and thicker growth. Small blocks of each plot were hurdled off from sheep during the whole year, and a botanical analysis is being made of all growths appearing on the different plots. A noteworthy feature up till the present is that naturalised clovers are becoming plentiful on all the manured plots.

Wheat at Booborowie.

During the past 12 years, wheat grown on the Experimental Farm at Booborowie has averaged 25½bush. to the acre. The average rainfall during that period has been 18.59in. In three years only has the yield been lower than the average, namely, 1913, when the return was 17bush. to the acre, 1914, when it was 2bush. 55lbs. to the acre, and in 1921, when it was 20bush. 29lbs. to the acre. The yield for the season just closed was 31bush. 30lbs. In all, 19 varieties were grown last year and those which yielded above the average were:—Yandilla King, Federation, and Marshall's No. 3.

Subsidised Bulls.

It is pleasing to note the extent to which dairy farmers are availing themselves of the liberal assistance offered by Government to purchasers of pure-bred bulls. Under the Dairy Cattle Improvement Act, the purchaser of a herd sire can receive a gift of 60 per cent. of the purchase price of such bull. This is equivalent to a return of £6 for every £10 paid, and means that if a man pays, say £50 for a sire, the Government will recoup the buyer to the extent of £30. The purchaser thus obtains a £50 bull for £20. In return for this gift of 60 per cent., the Government expects the owner during the first 12 months after purchase, to make the services of the bull available (if required) for a certain number of "outside" cows, at a fee of not exceeding 10s. By purchasing under this scheme the buyer has the satisfaction of knowing that the Department of Agriculture will allow no bull to be handed over unless he is well grown, true to type, free from tuberculosis, and is the progeny of a cow which has reached a satisfactory butterfat output. Undoubtedly, the scheme is one of the most liberal ever offered to dairymen..

So far over 30 applications for Government subsidy have been received by the Department of Agriculture, and to date settlement has either been made or will be made within a few days, to 22 of that number, as indicated by the following list:—Jerseys—Messrs. T. J. Mareus, Penola; R. J. Hague, Clare; E. E. Hewitt, Caltowie; W. H. Axford, Jamestown; A. C. Weston, Meningie; A. W. Osborne, Auburn; J. H. Wilhelm, Mannum; W. C. Eckermann, Eudunda; J. R. Bergmann, Freeling; C. W. Wagner, Eudunda; W. J. Richards, Narrung; B. G. Neumann, Hampden; P. H. Pickering, Mypolonga; J. T. S. Bott, Murray Bridge; C. F. Sage, Cooke's Plains; F. W. Webb, Halbury; W. A. Duncan, Marrabel; C. H. Giersch, Kapunda; S. Shepherd, Kybybolite; T. Vogt, Saddleworth. Friesians—Messrs. L. G. Foster, Mypolonga; and B. Lane, Murray Bridge.

The Dairy Position.

From the point of view of the dairyman, the month of July was not altogether a satisfactory one. The month was almost rainless, and many very severe frosts were experienced. Consequently, pastures did not make much growth during July, and in the absence of this, there was no marked improvement in the milk supply. The Dairy Expert (Mr. P. H. Suter) advises dairymen to continue hand feeding their cattle during the coming month. If maximum returns were to be secured from spring pastures, the cows should come through the cold winter months in good heart and condition.

The Fruit Position.

The orange crop this year, according to the Horticultural Instructor (Mr. George Quinn) is not a heavy one. As a general rule, the eastern side of each tree only has produced fruit. This is attributed to the extremely cold, cutting, south-westerly winds experienced during September and October last year, when the trees were blooming or setting young fruits. The size and appearance of the fruit is good, but the flavor is scarcely as sweet as usual. Lemons are abundant and low in price, a not unusual state of affairs during the winter season. Apples in cold stores are keeping pretty well on the whole. Some sorts, such as Rome Beauty, have developed fusicladium spots where slightly infected at harvest time. Others, particularly Jonathons, are showing "scald" in some stores.

Collecting Clover Seed.

For the purpose of collecting Subterranean clover seed, Mr. E. C. H. Schinckel, of Kybybolite, recently made a stack containing about 30 tons from an area of approximately $7\frac{1}{2}$ acres of land under this clover, and this was subsequently threshed. The crop was first drawn into rows with the aid of an implement of Mr. Schinckel's own design,



Subterranean Clover, drawn into rows, preparatory to stacking on the Farm of Mr. E. C. H. Schinckel, Kybybolite.

which it is claimed, is capable of collecting 90 per cent. of the seed. Before the field was shut up to enable the clover to mature seed, it was pastured during the winter with a flock of sheep at the rate of about 4 sheep to the acre. After the seed was collected the land was dressed with 45 per cent. superphosphate at the rate of 2 cwt. per acre. The subsequent growth is now being grazed by sheep. The rate of stocking per acre is 5 ewes with their lambs, and this heavy feeding is making no marked impression on the growth. In the near future this field will again be closed to enable it to mature another seed crop.



Thirty Tons of Subterranean Clover, stacked for Threshing, on the Farm of Mr. E. C. H. Schinckel, Kybybolite.

Agricultural Conference at Port Elliot.

The Annual Conference of representatives of Branches of the Agricultural Bureau situated in the Southern District will be held at Port Elliot on Friday, August 15th. The conference will be opened by the Minister of Agriculture (Hon. T. Butterfield, M.P.). The principal items for consideration are the following papers by the delegates mentioned:—"Most Suitable Sheep for the Southern District," Mr. G. Stacey (Rapid Bay); "Fat Lamb Raising," Mr. J. J. Bradford (Strathalbyn); "Sheep on Small Holdings," Mr. A. E. Henley (Rockwood); "Destruction of Foxes," Mr. L. Morris (Rapid Bay); "Top Dressing of Pastures," Mr. L. W. Rust (Brinkley); "Top Dressing Dairy Pastures," Mr. G. Connor (McLaren Flat); "Planting Timber Trees," Mr. J. P. Colebatch (Port Elliot); "Soil Fertility," Mr. E. R. Heath (Rockwood); "Cultivation of Wheat," Mr. T. B. Ness (Milang). The Director of Agriculture (Professor A. J. Perkins), the Superintendent of Experimental Work (Mr. W. J. Spafford), the Chief Inspector of Stock (Mr. C. A. Loxton), the Dairy Expert (Mr. P. H. Suter), Messrs. L. T. Cowan B.Sc., A. M. Dawkins, C. J. Tuckwell, and H. J. Finnis (Secretary of the Advisory Board of Agriculture) will attend the gathering.

Apple Growers' and Dealers' Problems.

The past season afforded not only an abundant crop of apples in this State, but the fruit displayed exceptionally fine development. The Horticultural Instructor (Mr. Geo. Quinn) in commenting on the season generally, remarked that the codlin moth was kept well under control and wherever spraying with arsenate of lead had been applied intelligently—and this was very general in the commercial orchards—the percentage of infested fruits was negligible. Notwithstanding the dampness of the summer and autumn months, the black spot or scab (*fusicladium*) was not much in evidence at the time of harvesting, but in the hills district wherever the well known Cleopatra variety was grown, the bitter pit took a large toll of the finest sized fruits. The overseas export absorbed over 250,000 cases—the highest export total yet reached from this State. The failure of the apple crop in Tasmania, and the limited yield in Victoria, afforded a good outlet in the Sydney markets and up to the end of May, over 150,000 cases had been shipped or railed there. The prices on the whole had been reasonably good for good quality, small, and medium sizes in this trade.

Besides these outlets, many thousands of bushels had been shed stored in the orchards, but these stocks were rapidly becoming depleted as the percentage of waste was now quickly beginning to tell on this type of fruit. During the glut of the harvest season an all round shortage of cases caused many thousands of bushels to fall to the ground before the necessary containers could be obtained. Much of this fruit was, unfortunately, lost. In addition to the above trade lines the cold stores which were now well scattered throughout many of the larger apple producing centres as well as in the metropolitan area, had been filled. A proportion of the fruit in cold store was beginning to display various defects. For instance, the popular Jonathon had in some cases developed the well-known cold store "scald" which turned areas of the fruit quite brown, giving them a peculiar piebald appearance and, without breaking the skin, the tissue beneath became decomposed and spoilt. This trouble had been investigated in the United States of America and it was claimed that the defect was due to malodorous emanations from the fruit other than the usual carbon dioxide gas about which so much had been heard in respect to the "brown-heart" trouble which decimated the Australian apples en route Britain a couple of years ago. It had been proved in America that this "scald" could be averted almost wholly by wrapping or packing the apples in grease or wax impregnated papers which had the quality of absorbing these odours before they became injuriously concentrated. Another development had more recently arisen in the form of a virulent ebullition of the black spot fungus. A few fruits—chiefly of the Rome Beauty variety—from certain localities apparently had a few isolated pustules of this fungus on them when harvested and packed. These diseased areas were evidently at that time actively erupting their masses of spores, which were either rubbed or wiped on to other fruits in the handling processes incidental to picking and packing the apples. Since being stored these have incubated and entered the skins of the apples and started to grow and fructify more freely—more par-

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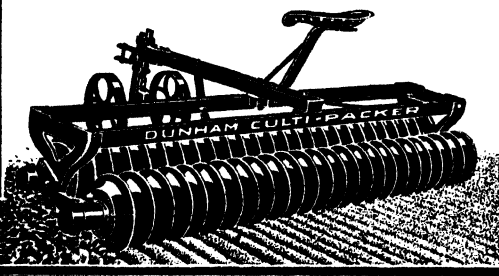
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ticularly on the tissue wrapped specimens, until now they were literally demonstrating why the term "black spot" was applied to the disease. Examined under magnification the ramifications of the fungus beneath the transparent skin of the apples resembled the spread of a seaweed when pressed between sheets of paper and one readily understood the origin of the specific name, dendriticum—meaning tree-like—given to this fusieladium form of the fungus. Similar developments in orchard stores had been common in other years on such late varieties as Stone Pippin and London Pippin, when they were harvested during the moist or rather humid autumn conditions which occasionally prevailed at that season in the mountainous country east of Adelaide. It was difficult to suggest a remedy for this stage of this disease, excepting perhaps when the seasonal conditions were such as described above, all specimens showing "scab" spots should be separated from the clean ones at an early stage in the harvesting operations.

A Census of Fruits.

Having had brought under his notice a report from Queensland, in which it was mentioned that a scheme to bring about the registration of all fruit trees in that State was being developed, the Horticultural Instructor of the Department of Agriculture (Mr. Geo. Quinn) commented that some form of registration of orchards for the purpose of dealing with diseases was a basic step. The time had arrived when it was necessary that a much more complete statement of the kinds and quantities of fruits that were planted in the various States should be on record. It had been suggested by the Australian Fruit Council that a census should be taken of all the fruit growing in the Commonwealth. This matter was brought before the different State authorities, and in some instances, a considerable effort has been made to secure this information. Unfortunately, the States of Tasmania and South Australia were behind in this respect. With the information likely to be revealed by such a census, it would be a much easier matter to answer the questions "What fruits have proved successful?" and "What is it desirable to grow?"

Licensing of Bulls.

Under the Dairy Cattle Improvement Act a licence fee of 10s. per annum must be paid by the owner in respect to every bull over six months of age. It was anticipated that the operation of the Act would not only provide funds to be used for the improvement of our dairy cattle but would directly tend to improvement in our herds by causing owners of scrub bulls to get rid of them. The first year's operation of the Act resulted in 6,709 bulls being registered, but last year this fell to 5,060, a falling off of 1,649. On inquiry from issuers of licences, the reason given in most cases is that owners of inferior bulls have castrated or disposed of the animals for slaughter in preference to paying the registration fee. This view is borne out by the fact that

the number of bulls slaughtered in the metropolitan area alone last year exceeded the number slaughtered during the year ending June 30th, 1922, by 646. During the past two years, over 3,000 bulls have been slaughtered in the metropolitan area.

Anthracnose or Black Spot.

Anthracnose or Black Spot of the grape vine is caused by a fungus which passes its dormant period in the old scars which it made on the previous year's shoots of the vines. The first step in suppressing its ravages, according to the Horticultural Instructor (Mr. Geo. Quinn), consists of carefully burning all prunings from vines known to be infected. After this has been done, the remaining spurs and rods should be dressed with one or other of the following, prior to the bursting of the buds in Spring:—

Formula 1.—Sulphate of iron and sulphuric acid swab, which may be made up in the following manner:—Place 35lbs. of sulphate of iron crystals in a wooden tub or barrel and pour over it about 7lbs. of commercial sulphuric acid, then pour boiling water over the crystals until 10galls. of same have been used to dissolve the mass. Whilst the water is being added, the mixture should be carefully stirred. This solution is best applied in a warm state, otherwise crystallisation may take place. It is put on by means of a brush or swab fixed to a short handle and it must be rubbed well over the spurs and rods and placed where water shoots have been cut off old wood, care being taken to saturate any scars noticed on the young wood.

Formula 2.—Make up a 10 per cent. solution of commercial sulphuric acid by carefully pouring 10lbs. of same into 9galls. of water, stirring the solution as it is gently mixed, to avoid spurling. Under no circumstances should one pour the water on to the acid, but gently trickle the acid into the water whilst it is being stirred. This formula may be used as a swab as previously described, but it is most generally applied by means of a spray pump with a nozzle which will concentrate the spray on a relatively small area.

Both of those treatments are made with solutions which are extremely corrosive to the skin and destructive to clothing, consequently it is necessary that the operator should wear old clothes and boots, thick gloves, protect his face by means of a cloth mask, and cover the eyes with goggles. The best results have been achieved when these dressings have been applied within a fortnight of the buds starting to unfold on the vines. If they are used later, there is a danger of considerable injury resulting to the vines. Where the anthracnose has been severe, the winter treatment should be followed by a spraying with Bordeaux mixture after the young shoots have emerged to a length of one foot. This spraying, it may be mentioned, will also have a protecting effect on the young foliage against the attack of Downy Mildew.

INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

[Replies supplied by MR. ALAN H. BOBIN, B.V.Sc., Veterinary Officer, Stock and Brands Department.]

"S. J. H.," Ycelanna, has aged gelding in good condition. Is constantly rubbing itself on posts, and has rubbed patches of hair off the skin.

Reply—Give the horse a good purgative—an aloes ball or raw linseed oil 1½ pints, turpentine 2ozs.—and subsequently feed on light, sloppy feed with a handful of Epsom Salts mixed in it night and morning, or give a liberal supply of green feed in the ration. Isolate the animal from the others and wash over with warm soapy water with a little lysol added, using a scrubbing brush. Dry off thoroughly afterwards to prevent the animal taking a chill. This should be sufficient after two or three bi-weekly applications, unless the condition is one of mange. In this case, clip hair round the affected spots, dress every second day with some of the following, rubbing it on with a piece of clean rag after first cleaning the patches in the above manner:—Beechwood creosote 1 part, rape or raw linseed oil 8 parts.

"H. R.," Warrambo asks treatment for stoppage of water in horses.

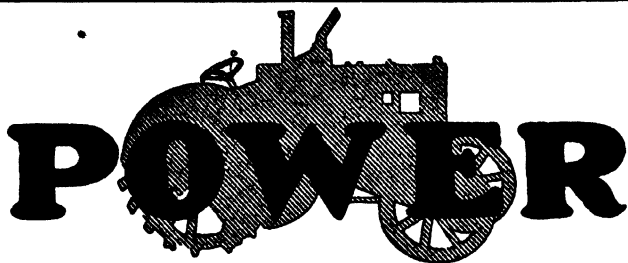
Reply—Keep the sheaths of the horses well cleaned out and allow them to have a liberal supply of clean water to drink; they will not then be prone to suffer from stoppage. Demulcent drinks—hay tea, linseed tea, or a draught of ½ pint of gin with about 20 drops of essence of peppermint in a quart of cold water—are all very serviceable and safe to use to induce a more copious flow of "water" (urine).

Hon. Secretary, Agricultural Bureau, Shoal Bay, reports mare that when released from work sucks in wind, and when standing in the yard the head droops.

Reply—The mare is a "wind sucker." This is merely a bad habit, which when indulged in becomes very hard to check, and in time may have some detrimental effect on the health of the animal. It may be possible to check the habit by buckling a broad strap round the neck of the mare (just behind the angles of the lower jaw), at such a degree of tightness that it will prevent the animal contracting the neck muscles, which it has to do in order to be able to carry out the air swallowing. At the same time the strap must not be too tight so as to interfere with breathing or swallowing of food and water.

"W. S.," Wirrabara, has foal with enlarged knee joint. Foal is lame, and the swelling is becoming larger.

Reply—Try the application of a good red blister to the knee. Clip the hair short first over the knee before applying the blister, and be careful not to put any of the blister into the back of the knee, otherwise a nasty sore will develop. Apply the blister in the early morning, and tie the animal up short until evening, so that it will not bite the knee, or else bandage the knee for a day after blistering.



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"E. H. S.," Pungonda, reports cows chewing bones.

Reply—Keep the cow paddocks clean of old bones so that the cows cannot get them to chew. They may in this way contract disease from the bones. Give a daily allowance of common salt 1oz. and also 1oz. of fresh ground bonemeal in their feed, or supply the cattle with the following lick to which they can have free access—put it down in boxes near the water trough:—Common salt 10 parts, ground bonemeal 10 parts, and sulphate of iron (powdered) 1 part.

"A. G. T.," Glencoe West, has sheep dog stiff in joints, points nose towards the ground, and chokes and coughs whilst eating and drinking. Lump has formed under throat, and offensive-smelling matter is discharged from the mouth.

Reply—The case of your dog is one that really requires to be seen and closely examined to be able to form a clear idea of the exact nature of the trouble, and so be able to suggest a definite line of treatment to quickly alleviate it. It would appear that there is abscess formation in the throat, and which has burst inwardly so that the discharge comes away through the mouth. I can only suggest hot fomentations to the throat. Wash the mouth out with a diluted solution of peroxide of hydrogen and until the soreness and difficulty in taking food disappears maintain his strength by feeding on raw eggs whipped up in milk and sweetened with a little sugar, or feed on meat broth, bovril, etc. If the dog will not lap the food, it could be carefully drenched with the broth, &c.

"W. D. W.," Halidon, reports 8-year-old draught gelding who is constantly pawing the ground and turns the head around to the loins and each side of the body. Poor appetite, and appears to have trouble in passing water.

Reply—The horse is suffering from chronic indigestion. Give it the following drench:—Raw linseed oil 1 quart, turpentine 2ozs. Have some of the following powders made up, each containing powdered nux vomica 1 dram, powdered rad. gentian 3 drams. Give one of these twice a day a quarter of an hour before feeding, mix it in a spoonful of treacle to make a stiff, sticky paste, and smear it on the back teeth and tongue with a short flat piece of stick. Feed only on sloppy, easily-digested feed, and, subsequent to the oil working, put a handful of Epsom salts in the feed night and morning for a week. If the animal will not take his feed with the salts added, water it from a bucket and dissolve 1oz. of soda hyposulphite in his daily drink. Have the teeth examined to see that they are in proper order and, if necessary, have them dressed.

"J. A. O.," Waikerie," has mare which two months ago was deeply cut on the near side front hoof with plain wire. The mare has been lame ever since, and the wound has not yet healed properly.

Reply—Wounds in that particular part of the horse's body are usually very slow to complete healing, and in this case it should only be a matter of time. Watery dressings to the part is detrimental to healing. A little zinc ointment applied to the sore occasionally would be most beneficial. It is impossible to say definitely whether the animal will recover from lameness, it all depends on the degree with which the deeper structures of that part have been involved. In any case, the complete disappearance of lameness will be very gradual.

"R. P.," Cockatoo Valley, reports horse staked under the stifle some months ago. The wound at the point of entry is practically healed, but at the top where the stake came out the wound is suppurating freely.

Reply—It is quite probable that there is a small splinter of the stake embedded in the tissues, and until it is removed by operation the wound will not heal. Even if there be no such foreign body, the wound will not heal until proper drainage is effected for the discharge to get away other than through the top wound, and antiseptic irrigation of the depths of the wound practised. It is a job that should be attended by a veterinary surgeon.

"A. D. M.," Jamestown, reports horses with skin irritation of the legs and tail.

Reply—The horses are affected with a form of mange. The hair should be clipped from the tail and hind limbs up to the hocks. The affected parts of all limbs must then be washed with soap and warm water (using an old scrubbing brush), and then dried. For three or four times, at intervals of two or three

days, rub in well all over affected parts some of the following:—Kerosine 1 part, fish oil or raw linseed oil 2 parts. This treatment will usually effect a speedy cure.

“B. E. P.,” Georgetown.

Reply.—Your cow has an acute attack of mammitis in the two quarters of her udder. If you have any other cows, she should be kept strictly isolated from them. Strip the udder four or five times daily, destroying the milk. Foment the udder with cloths wrung out in hot water and a little antiseptic for about 15 to 20 minutes at a time. Dry off carefully, and then rub in a little camphorated oil, kneading and massaging the affected quarters gently but firmly. Keep the teats of the two healthy quarters smeared with some boracic vaseline to prevent infection spreading to them. Give the cow a good purging dose of Epsom salts 1lb., ginger 2oz., treacle $\frac{1}{2}$ lb. dissolved in $1\frac{1}{2}$ pints to 2pints warm water, and feed on light easily-digested feed. When the diseased condition has subsided, you will find it probably most economical to dry her off and fatten.

HANDLING NEW MALLEE LAND.

To a correspondent seeking information with respect to farming in the Tintinara district, the Superintendent of Experimental Work (Mr. W. J. Spafford) supplied the following in reply to the questions enumerated below:—

Question 1.—“Is it advisable to plough deeply for a start?”

Reply.—In most “new” mallee land in this State better returns are secured from crops when grown on land that has received very thorough but shallow cultivation rather than on deep work, and when ploughing Tintinara land for the first few years after the scrub has been burnt, a depth of 2in. would probably be better than going deeper.

Question 2.—“What crop would pay best on ‘new’ land?”

Reply.—To help kill the mallee scrub, it is necessary to grow several crops, to be able to get a running fire after the crop is harvested, and in the Tintinara district, oats should be directly profitable, as well as provide a good burn. To help towards success with this crop, seeding should be finished before the end of May.

Question 3.—“What amount of super is advisable?”

Reply.—At least 1cwt. superphosphate per acre should be supplied with all crops grown.

Question 4.—“Have Sudan grass, Wimmera rye grass, Evening Primrose, and such-like been experimented with?”

Reply.—A great number of fodder plants has been tested in the Tintinara and similar districts, and given correct handling and plenty of phosphatic fertiliser most of the well-known fodder crops can be successfully grown in this district after the scrub has been killed.

MAGNESIA LAND.

A correspondent in the Jamestown district mentions that he has about 40 acres of land which is “affected with magnesia.” He seeks advice as to the method of handling this area, and asks the following questions:—

- (1) How deep would you advise ploughing this land in the first instance?
- (2) What particular kind of super would you advise using?
- (3) What would be the most suitable to sow, cereal crops or clover?
- (4) Would field peas prove successful?

The Director of Agriculture (Professor Arthur J. Perkins), to whom this inquiry was submitted, mentioned that before it was possible to give satisfactory advice on the position it was necessary to secure field information, and possibly an analysis of the soil. It was necessary to know, for example, also, whether it was intended to irrigate the land, whether the salt was of recent appearance or had been known to be present for some time past, or whether it had arisen as a result of the heavy rainfall in 1923-1924. Subject to further information, however, the following replies were supplied to the questions raised:—

(1) If the saline efflorescence is showing clearly on the surface, you will generally notice that it is thickest towards the end of the season, and it follows that it would tend to interference with the germination of the autumn-sown seed, unless you can bury the salt deeply by deep ploughing, assuming that deep ploughing does not affect the general growth of your crop as it would do in the case of a wheat crop. Further, there will be less salt near the surface at the end of the winter than at any other time of the year, and it follows that seeding of spring-sown crops, such as, lucerne, sorghum, Sudan grass, and so on, can frequently be carried out under satisfactory conditions when winter-sown crops fail. From a general point of view it is usually better to plough deeply land that tends to show salt on the surface.

(2) It is quite immaterial what kind of super you use on this land, providing it is dry and free-running.

(3) I am afraid that I know of no clovers likely to succeed in your district excepting, perhaps, winter-sown Berseem clover, providing the land is sweetened. Generally, therefore, it would be better to sow cereal crops in the winter or Sudan or sorghum in the summer.

(4) I see no reason to believe that field peas would fail, providing they are sown sufficiently late so that the salt may have been washed down into the sub-soil.

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SEPTEMBER 9th, 10th, 11th, 12th, 13th.

ENTRIES CLOSE:

Poultry		Citrus Fruit	
Pigeons.		Packing Comp.	
Dogs, Cats	{ August 6th	Horses in	{ August 22nd
Cattle, Sheep.		Action	
Horses, Dairy	{ August 8th	Fruit, Vege-	{ August 27th
Produce, &c.		tables, and	
Fruit (classes	{ July 28th	Floriculture	{ Sept. 11th
1144-46)		(excepting plants in pots)	

Further particulars on application.

J. A. RILEY, Secretary, 23 Waymouth Street, Adelaide.

FAT LAMB BREEDING AT ROSEWORTHY AGRICULTURAL COLLEGE.

[By W. J. COLEBATCH, B.Sc. (Agric.), M.R.C.V.S., Principal Roseworthy Agricultural College.]

In November of last year, a deputation consisting of representatives from the Stock Owners' Association, S.A. Frozen Meat Exporters' Association, and the Government Produce Department was called to wait upon the Minister of Agriculture for the purpose of drawing his attention to the importance of the experiments being conducted at Roseworthy College in fat lamb production. The conference was arranged by Mr. G. A. W. Pope, general manager of the Government Produce Depot, who expressed the view that the matter contained in a paper read by the College Experimentalist (Mr. R. C. Scott) before the Annual Congress of the Agricultural Bureau was of such value to the State, that nothing should be allowed to interfere with the continuance of the work and the periodic dissemination of the results through the columns of the general and agricultural press. This view was indorsed by the Honorable Minister, and I undertook to see that progress reports would be published from time to time as further data became available. In connection with the marketing, slaughtering, and valuing of carcasses, enthusiastic assistance has been rendered by Mr. Pope and his staff, and their co-operation has materially added to the value of the tests undertaken.



Sire, Dorset Horn. Dam, English Leicester Merino.

Since the publication of the last report, further particulars in respect of wool yields and lamb production have been compiled, and are now published for the information of those interested.

By way of explanation, the scheme of the lamb-breeding tests is designed to enable comparisons to be made between half-bred and quarter-bred Merino lambs raised on the one holding and subjected to similar treatment throughout. From the Merino ewes are bred seven lines of half-bred lambs, the sires used being representatives of the Lincoln, English Leicester, Border Leicester, Romney Marsh, Dorset Horn, Shropshire, and Southdown breeds. In addition, the ewe lambs from the four long-woolled half-breds are kept to build up four half-bred breeding flocks, each of which is split into three parts at mating time, in order to secure three-part-bred lambs by short-wool rams—Dorset Horn, Shropshire, and Southdown. In this way 19 types of lambs, five types of ewes, and seven breeds of rams are brought under test. Reference to the appended scheme will dispel any misconceptions as to the procedure adopted.

EWE.		RAM.	LAMB.
Merino	.. . . .	Lincoln	Half-bred
"	.. . . .	English Leicester .. .	"
"	.. . . .	Border Leicester. . .	"
"	.. . . .	Romney Marsh	"
"	.. . . .	Dorset Horn.	"
"	.. . . .	Shropshire	"
"	.. . . .	Southdown	"
Merino x Lincoln	.. . . .	Dorset Horn	Three-quarter bred
"	.. . . .	Shropshire	"
"	.. . . .	Southdown	"
Merino x English Leicester	.. . . .	Dorset Horn	"
"	.. . . .	Shropshire	"
"	.. . . .	Southdown	"
Merino x Border Leicester	.. . . .	Dorset Horn	"
"	.. . . .	Shropshire	"
"	.. . . .	Southdown	"
Merino x Romney Marsh	.. . . .	Dorset Horn	"
"	.. . . .	Shropshire	"
"	.. . . .	Southdown	"

5 types.

7 breeds

19 types

In order that this comprehensive scheme shall be continued under fairly equal conditions, it is of vital importance that the ewe flocks should be bred at the College. This obviously involves the carrying of a large flock of immature ewes to make good the annual drafting losses. In all, between 850 and 900 ewes are kept for the purpose of these tests, in addition to a stud flock of Southdowns and an unavoidably large number of rams on a farm of 2,000 acres, more than one-third of which is given over to cropping.

WOOL YIELDS.

The effect of last season's clip was to raise the average yield by approximately $\frac{1}{2}$ lb. in the case of the Lincoln Merino and English Leicester Merino crosses. This places the latter almost on a level with the Border Leicester Merino, whilst the Lincoln Merino lead is increased to 1.12lbs.

Average Fleece of Ewes.

Year.	Merino.	Lincoln-Merino.	Eng. Leic.-Merino.	Bord. Leic.-Merino.	R. Marsh-Merino.
	lbs.	lbs.	lbs.	lbs.	lbs.
1920 . . .	9.69	9.42	8.89	9.48	8.84
1921 . . .	9.81	12.53	11.45	11.80	11.11
1922 . . .	12.60	12.70	10.86	10.67	11.47
1923 . . .	10.99	12.43	11.21	10.63	10.54
Mean . .	10.77	11.77	10.60	10.65	10.49

LAMBING PERCENTAGES, SEASON 1924.

On the whole, we have had very pleasing results from the lambing fields this year. The highest percentage recorded was 115.63 of tailed lambs to ewes mated. The flock accountable for this return, which



Sire, Shropshire. Dam, English Leicester Merino.

I believe to be a record for the College, is the Border Leicester Merino, and the sire was a Dorset Horn. Included in this flock were several cases of triplets, but only one such family was successfully reared. Out of a total of 731 ewes, which yielded 91.93 per cent. of increase, 358 were pure Merinos and 373 half-breds. From the Merinos we tailed 87.15 per cent., and from the half-breds 96.51 per cent. It is important to stress the point that in all calculations em-

bodied in this report the total number of ewes mated and the tally of lambs tails are the figures adopted. The percentage of lambs dropped to ewes present at lambing would, of course, be appreciably higher in every case.

LAMBING, 1924.

Ewes Mated.	Breed.	Ram.	Lambs Tailed.	Percent age.
67	Merino	Lincoln	66	98.51
67	"	English Leicester	61	91.04
67	"	Border Leicester	62	92.54
67	"	Romney Marsh	47	70.15
30	"	Dorset Horn	23	76.67
30	"	Shropshire	25	83.33
30	"	Southdown	28	93.33
358			312	87.15
31	Lincoln x Merino	Dorset Horn	31	100.00
31	" "	Shropshire	27	87.10
32	" "	Southdown	31	96.88
94			89	94.68
32	Eng. Leic. x Merino	Dorset Horn	26	81.25
31	" "	Shropshire	27	87.10
31	" "	Southdown	30	96.77
94			83	88.30
32	Border Leic. x Merino	Dorset Horn	37	115.63
31	" "	Shropshire	34	109.68
31	" "	Southdown	32	103.23
94			103	109.57
30	Romney Marsh x Merino	Dorset Horn	32	106.67
30	" "	Shropshire	23	76.67
31	" "	Southdown	30	96.77
91			85	93.41
Total crossbred ewes 373			360	96.51
Grand total ewes 731			672	91.93

PROLIFICACY OF RAMS, 1924.

Ram.	Ewes.	Lambs.	Percentage.
Dorset Horn	155	149	96.13
Shropshire	153	136	88.89
Southdown	155	151	97.42

AVERAGE LAMBING RETURNS OVER PERIOD COVERED BY EXPERIMENTS.

(a) Half-bred Flocks.

The outstanding supremacy of the Border Leicester cross in the matter of prolificacy has again been demonstrated, and the mean percentage has been raised in one season from 91.20 to 95.79. The other

breeds occupy the same relative position as formerly, the Lincoln cross being a good second, the Romney Marsh cross a satisfactory third, whilst the English Leicester Merino ewes (although this season's lambing was a fairly good one) are still credited with an average increase of only 82.14 per cent.

The effect of the 1924 results in these flocks has been to place the Border Leicester Merino ewe ahead of all other half-breds, irrespective of the breed of ram mated with them. Further, it may be noted that the highest average yield of lambs was obtained from Border Leicester x Merino ewes mated to Dorset Horn Rams.

SUMMARISED LAMBING RECORD—1921-1924.

<i>Lambing Percentage from Half-bred Ewes.</i>					
Ewe.	Year.	Ram.			
		Dorset Horn. %	Shrop- shire. %	South- down. %	Fertility of Ewe. %
Lincoln-Merino	1921	93.18	83.72	79.07	85.32
“	1922	80.00	82.98	100.00	87.66
“	1923	90.63	74.20	103.27	89.37
“	1924	100.00	87.10	96.88	94.68
Mean fertility of ewe, 1921-1924		90.95	82.00	94.81	89.26
English Leicester-Merino	1921	65.22	77.78	71.11	71.37
“	1922	80.49	87.80	60.98	76.42
“	1923	100.00	90.32	87.10	92.47
“	1924	81.25	87.10	96.77	88.30
Mean fertility of ewe, 1921-1924		81.74	85.75	78.99	82.14
Border Leicester-Merino	1921	82.50	69.05	82.93	78.16
“	1922	90.90	88.37	97.67	92.31
“	1923	100.00	112.50	96.88	103.13
“	1924	115.63	109.68	103.23	109.57
Mean fertility of ewe, 1921-1924		97.26	94.90	95.18	95.79
Romney Marsh-Merino	1921	78.57	69.77	78.57	75.64
“	1922	87.50	76.74	83.30	82.52
“	1923	84.85	71.88	109.38	88.70
“	1924	106.67	76.67	96.77	93.41
Mean fertility of ewe, 1921-1924		89.40	73.77	92.01	85.07

(b) Merino Ewe Flocks.

The improvement in fertility has been more marked with the merino flocks than with any of the half-breds, but the 1923 figures were decidedly too low, and consequently a considerable advance was to be anticipated in view of the nature of the season. An all-round percentage of 87.15 is probably above the normal average for Merino

ewes in this locality, but I believe the present mean return, namely, 78.12 per cent., shown below will gradually advance to 80 per cent., or perhaps a little higher as the experiment proceeds.

(c) *Fertility of Rams.*

It is convenient to bring in the table relating to fertility of rams at this stage, and it will be seen from these figures that of the long-wool breeds the Lincoln and English Leicester rams are on an equality in this respect, but both the Border Leicester and Romney Marsh have failed to yield satisfactory returns. In fairness to the Border Leicester, however, it must be said that the 1924 percentage was excellent, and I have no hesitation in predicting in the course of three or four seasons this breed will surpass the records for the English Leicester, and prove a strong rival to the Lincoln for the first position.



Sire, Dorset Horn. Dam, Border Leicester Merino.

Of the short-woolled breeds, the highest average returns from all classes of ewes have been obtained by rams of the Southdown breed. The average percentage over the last four years works out at 90, and in three out of the four seasons this breed has led the way. The returns from the Dorset Horns are but little inferior, and even the Shropshire percentage may be regarded as satisfactory.

LAMBING PERCENTAGES FROM MERINO EWES, 1923-1924.

Year.	Ram.							
	Lincoln.	E. Leic.	Bor. Leic.	B. Mar.	Dorset H.	Shrop.	S. Down.	Mean.
	%	%	%	%	%	%	%	%
1923 . .	71.64	80.60	50.75	64.18	83.87	83.33	60.00	69.08
1924 . .	98.51	91.04	92.54	70.15	76.67	83.33	93.33	87.15
Means . .	85.08	85.82	71.65	67.17	80.27	83.33	76.67	78.12

PROLIFICACY OF RAMS—SUMMARY, 1921-1924.

	Percentage of lambs obtained by—		
	Dorset Horn.	Shropshire.	Southdown.
	%	%	%
1921..	79.87	75.08	77.92
1922..	84.72	83.97	85.49
1923..	93.87	87.23	99.16
1924..	96.13	88.89	97.42
Mean four years ..	88.65	83.79	90.00

Mr. Scott, who is in charge of this experiment, is to be complimented on the highly satisfactory percentages obtained this season. To him belongs the credit for the careful supervision of the flocks and the preparation of the tables.

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RED WHEATS.

STATEMENT BY THE MINISTER OF AGRICULTURE.

The Hon. T. Butterfield, M.P. (Minister of Agriculture), stated recently:—The position in regard to red wheat has occupied the minds of agriculturists for a considerable time. I find that in Melbourne in May, 1923, when a Conference of Ministers of Agriculture was held, attention was called by the South Australian Department of Agriculture to the injury likely to result to the reputation of Australian wheat by the shipment of red wheats, and the following resolutions were carried:—

- (a) That this Conference considers that the Departments of Agriculture of the various States should use efforts towards discouraging the growing of red wheats in the Commonwealth.
- (b) That no red wheat should be distributed for commercial sowing from State farms and colleges, and that the Royal Agricultural Society of each State be asked to eliminate red varieties of wheat from their wheat competitions.

Following these resolutions, the Department of Agriculture, through the Agricultural Bureau, through paragraphs in the public press, and at Agricultural Bureau Conferences, has given effect to these resolutions, inasmuch as its officers are doing all in their power to discourage the growth of these wheats. At the Conference of Ministers of Agriculture held in Sydney this year the matter was again brought before the Ministers, when, after hearing the reports of the officers on the subject, the resolutions were re-affirmed.

The matter is of great importance to Australia as a wheat-growing country. Throughout the world we have secured a reputation for the production of a white wheat, which stands much in advance of that grown elsewhere. Australian wheat can always be sold oversea, even when the most adverse conditions are affecting the world's market. Our white wheats are bought at all times and at all prices, whether the market is high or low, for mixing and blending with the red wheats of the Argentine, Canada, and India. If we allow the quality of our wheat production to deteriorate by growing more red wheat, we will be on a par, so far as wheat values are concerned, with other countries, and will lose that value which in the past has attached to the superiority of our wheat for grading purposes. The Departments of Agriculture in each of the States are sufficiently aware of the position, but if the farmers will not take the advice of the Departments and heed the warnings uttered from time to time in regard to the injury that would accrue to the wheat trade of Australia by growing more red wheat, we will have to consider seriously the advisableness of getting in touch with the Commonwealth Government to prevent the export of red wheat altogether.

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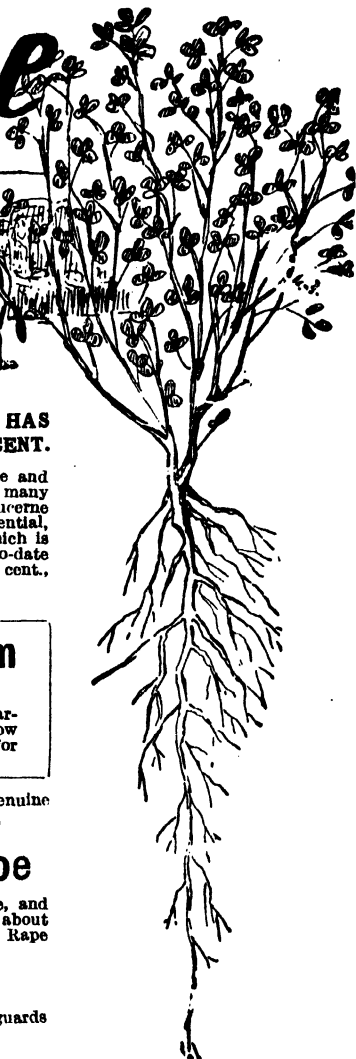
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AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

PRUNING COMPETITIONS ON RIVER MURRAY SETTLEMENTS.

"There is a great improvement noticed in all the centres in the standard of pruning. I have no hesitation in saying that the competitions are accomplishing that for which they were set out, namely, lifting the standard of pruning to a higher level and establishing definite uniform systems of treating the various vines and trees grown along the river."

This is the opinion expressed by the Deputy Horticultural Instructor (Mr. C. G. Savage) after having acted as judge in the pruning competitions held on the various River Murray Irrigation Settlements during the past four years. The competitions, which were arranged by the local Branches of the Agricultural Bureau, were held at Mypolonga on July 4th; Moorook, July 8th; Waikerie, July 9th; Cadell, July 10th; Berri, July 15th; and Renmark, July 16th. In each of these centres there was keen competition. Those who secured first, second, and third positions in the district competitions were eligible to take part in the Championship Competitions held at Berri on Thursday, July 17th. At these competitions each of the districts was represented, and keen interest was taken in the events.

THE AWARDS.

First prize in the Tree Section, the "Sulphate of Ammonia Cup," went to Mr. L. A. Chapple, of Berri, with 262 points out of 300. Second prize, Gold Medal, went to Mr. E. Miller, of Waikerie, 259 points; and third prize, Gold Medal, Mr. C. P. Smith, of Waikerie, 256 points. In the Vine Section, first prize, "Sulphate of Ammonia Cup," was awarded to Mr. P. John, of Renmark, who secured 273 points out of a possible 300. Second prize, Gold Medal, went to Mr. B. C. Niehus, Renmark, 264 points; and third prize, Gold Medal, to Mr. J. Virgo, Waikerie, 263 points. In the Championship events, the judge (Mr. C. G. Savage) was assisted by Mr. W. R. Lewis, of Berri, and Mr. F. Hooper, of Renmark.

AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

CONFERENCE OF UPPER NORTHERN BRANCHES.

The Branches of the Agricultural Bureau situated in the Upper Northern Wheat Growing Areas of this State met in Conference at Willowie on Wednesday, July 16th. The Branches represented and the delegates were as follows:—Morehard: Messrs S. T. Davill, H. G. Kupke, F. Scriven, J. Scriven, A. Tillbrook, F. Davill, G. Wool-

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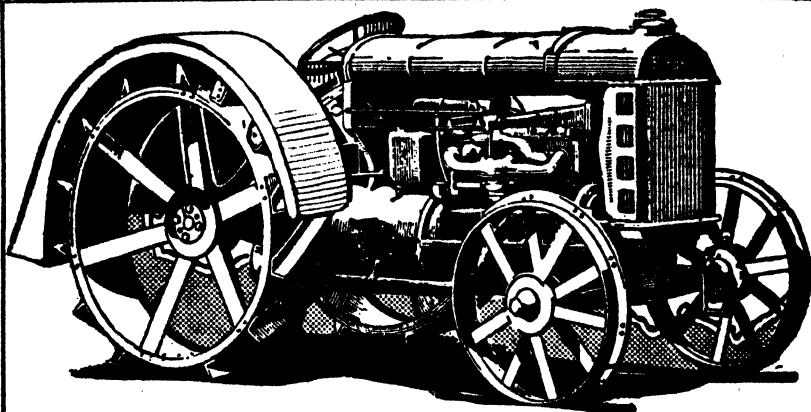
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THE OPENING CEREMONY.

Mr. A. Bartlett presided, and Mr. George Jeffrey (Member of the Advisory Board of Agriculture) delivered the opening address. He claimed to be one who had had the opportunity of viewing the wool business from various angles, and he spoke with some knowledge of the trade. Producers were in for a period of high prices for wool for a long time to come. Recently, there had been a rather nasty setback in the trade, but that had not affected the business in Australia one iota. He believed that wool prices would next year again be high, and he saw no reason to think prices would fall for a long time to come. Mr. Jeffrey said he could with certainty advise them regarding one method of increasing production, and that was by the application of superphosphate to pasture lands. He believed that the dressing of grass land with super would prove just as useful to the sheep farmer as the application of artificial manure had been to the wheat grower and agriculturist. In the the South-East, and the Adelaide Hills, the experience had been that with an expenditure of 7s. per acre, a return of 30s. was received. With such future prospects for the wool industry, he believed it would be criminal if they did not do the best for themselves and the world in general. Farmers who could grow wool and did not, were committing a sin against themselves and posterity. He then declared the Conference open. Mr. A. M. Dawkins (member of the Advisory Board) supported Mr. Jeffrey.

PAPERS AND DISCUSSION.

Farm Machinery.—A paper contributed by Mr. S. T. Davill (Morchard) urged that in this time of high prices of machinery it would be well for the farmer to give every attention to its care. He advised a seasonal overhauling and replacement of the worn parts. Likely breakages of individual machines were dealt with, and the importance of lubrication stressed.

Recreation for Farm Hands.—The importance of the provision of recreation for farm hands in its relation to the problem of checking the drift of the population to the city was urged in a paper by Mr. F. Bull (Willowie).

Farm Tractors.—His experience with the small type of tractor was given by Mr. R. T. Avery (Willowie). His general conclusion was that, although at present tractors were not popular in the Willowie district, it would not be long before they were so. A general discussion followed, in which the principal item of contention was the prospective life of a tractor.

CROP COMPETITIONS.

The Government scheme for the encouragement of crop competitions was outlined by the Secretary of the Advisory Board of Agriculture (Mr. H. J. Finnis), after which it was decided that a district embracing the country to the north and/or east of a line drawn from the south-western corner of the hundred of Gregory, due east to the railway line at Black Rock; then south along the railway line to Yarcowie, and due east to the border of the State. Delegates undertook to see that at the next meeting of each Branch interested a representative was appointed to act on the Committee of Management. Mr. C. J. Tuckwell was appointed General Secretary.

MORE PAPERS.

Barometer on the Farm.—The value of the barometer from the point of view of the farmer was pointed out in a paper by the Rev. A. Trengrove, of Orroroo. The writer dealt in a very interesting way with many weather prophets and their systems, and recommended farmers to make a practice of carefully studying the barometer.

Increased Production.—Under the title of "The Best Method of Increasing Production in our District," Mr. S. G. McCallum recommended methods which he thought were likely to bring about heavier yields. Growing wheat on fallowed land, careful selection of seed wheat, the application of heavier dressings of seed and super, were recommended. The paper was well discussed.

SHEEP BRANDING.

The difficulties of complying with the requirements of the Sheep Branding Act where stock changed hands frequently were pointed out by Mr. S. J. McCallum (of Willowie). He suggested that succeeding owners of sheep should be entitled to place different colored numerals on the animals. It was also suggested that a neutral position might be established.

PLANT BREEDER.

On the motion of Mr. W. J. Smith (Wepowie), it was resolved that the Government should be urged to appoint a plant breeder to the staff of the Department of Agriculture.

It was decided that the next Conference should be held at Wilmington.

ADVISORY BOARD OF AGRICULTURE.

The monthly meeting of the Advisory Board of Agriculture was held on Wednesday, July 9th, there being present Messrs. W. S. Kelly (Chairman), Capt. S. A. White (Vice-Chairman), Professor Arthur J. Perkins, Col. Rowell, Messrs. W. J. Colebatch, M.R.C.V.S., J. W. Sandford, C. A. Loxton, B.V.Sc., A. B. Feuerheerdt, H. S. Taylor, H. Wicks, C. J. Tuckwell, F. Coleman, G. Jeffrey, and the Secretary (Mr. H. J. Finnis).

Apologies were received from Messrs. A. M. Dawkins, P. H. Jones, F. Julius, and L. Cowan, B.Sc.

Election of Officers.—Mr. W. S. Kelly and Capt. S. A. White were re-elected to the positions of Chairman and Vice-Chairman respectively.

Appointment of Members.—A notification was received from the Minister of Agriculture that he had appointed the following gentlemen as members of the Board for a further period of two years:—Messrs. F. Coleman, C. J. Tuckwell, and H. Wicks.

Coast Disease in Sheep on Kangaroo Island.—Correspondence was received from Mr. H. Noske, of Kingscote, pointing out the serious losses of sheep that were experienced on Kangaroo Island through "coast disease."

Protection of Timber on Roadsides.—After a general discussion dealing with the protection of trees on roadsides, Mr. F. Coleman moved, and Capt. S. A. White seconded, a resolution—"That in the opinion of this Board all trees growing or planted on the side of any road and not being on private land should be subject to the control of the Forest Department, whether or not moneys have been contributed out of the public revenue to the planting of such trees, and that it should not be lawful for any person or public body under any circumstances to cut down, damage, or remove any such tree except under the authority of a permit generally or specially issued by the Department to such person or public body." The motion was carried.

Maintenance of Roads.—The Coonalpyn Branch asked that the Board might help the district in its endeavor to obtain a substantial grant for expenditure on the construction and maintenance of roads in the Coonalpyn district. The Secretary was instructed to inform the Branch that the matter was one which did not come within the province of the Board, and to suggest that the request should be placed before the Members of Parliament for the district.

Registration of Bulls.—A communication was received from the Shoal Bay Branch asking that the Act relating to the registration of bulls should be enforced on Kangaroo Island. It was decided that the matter should be referred to the Dairy Cattle Improvement Act Committee for a report.

Experimental Station on Reclaimed Swamp.—The 1924 Conference of River Murray Branches resolved—"That the Advisory Board recommend the Government to establish an experimental station on a reclaimed area of the River Murray." On the motion of Mr. H. S. Taylor, seconded by Mr. J. W. Sandford, it was decided that the motion should be submitted to the Minister of Agriculture with the strong indorsement of the Board.

METROPOLITAN ABATTOIRS, ADELAIDE.

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January and July, 1921.

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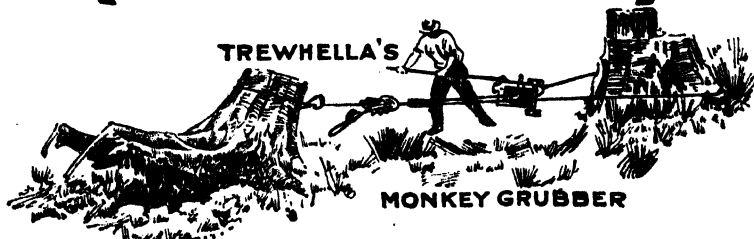
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Eradication of Take-all.—Correspondence was received from Mr. W. Heithersay asking that the sum of £20 should be placed at his disposal in order to enable him to demonstrate the effectiveness of a formula for the eradication of take-all. Mr. G. Jeffrey moved, and Mr. W. J. Colebatch seconded, that the Director of Agriculture should obtain a report on the matter from the Lecturer in Plant Pathology at the University, under whose direction investigations concerning take-all were being carried out.

Congress, 1924.—The Secretary informed the Board that Ministerial approval had been obtained for holding the 1924 Congress and the payment of fares for two delegates from each Branch of the Agricultural Bureau.

New Branch.—Approval was given for the formation of a Women's Branch of the Agricultural Bureau at Wilkawatt with the following ladies as foundation members:—Mesdames Neville (2), G. Oram, P. Gregurke, Pritchard, F. R. Koch, Phillips, D. Flannagan, P. Thompson, D. Bowman, H. Billing, B. Crettenden, and Misses R. and A. Sorrell.

Branch to be Closed.—It was decided to close the Wilkawatt Branch.

New Members.—The following names were added to the rolls of existing Branches:—Yallunda—W. R. Daggett; Rockwood—H. Green; McLaren Flat—S. Dodson, J. Dynes, F. Elliott; Moorook—J. Cheston, L. Barker, F. Patterson, jun., A. McGregor, V. Davies, F. C. Beech; Brinkworth—W. E. Bartlett, J. Darby; Narridy—A. F. Holland; Paskeville—R. Dick, C. Hastwell; Wirrabara—J. Hammill, Dyer, C. Jenner; Yadnarie—C. Deer, E. A. Spriggs, F. Houghton; Light's Pass—W. Hahn; Kringin—F. A. Nordhausen; Myrta—B. A. Voigt; Tarcowie—F. Travers; Tweedvale—C. A. Klose, H. Jarvis, F. A. Pulleine; Allandale East—J. Holland; Gladstone—S. J. Hipkiss; Sandalwood—A. E. Bartlett, C. E. Bartlett, R. Hood, M. Hood, G. Fischer, F. Fischer, L. W. Fischer, L. S. Norman; Claypan Bore—F. Ayton; Kalangadoo Women's—Mrs. C. Hill; Maltee—F. A. T. Edson; Wirrulla—P. G. Sheridan, F. Barnes; Pinnaroo—A. A. Neale, E. Morris; Gawler River—J. T. Hayman, J. Brown; Morchard—M. Brown, F. Brown; Weavers—A. Agnew, G. Agnew, F. Falkner, G. A. Wurm, Welbeby, A. Bowman, E. Bowman, J. Hickman, J. A. Bridges, W. Natt; Nantawarra—L. Burgess; North Booboorowie—F. Earle; Mypolonga—E. J. Petney, A. Traeger, C. Nash, H. Lewis, A. Fallon, S. Taylor, H. Pearce, J. Victory, E. Revel; Arthurton—H. D. Noble.

IMPORTS AND EXPORTS OF FRUITS, PLANTS, ETC., JUNE, 1924.

IMPORTS.

Interstate.

Apples (bushels)	110
Bananas (bushels)	7,279
Oranges (bushels)	2
Passion fruit (bushels)	1,178

IMPORTS—(continued.)

Pears (bushels)	7
Pineapples (bushels)	233
Peanuts (packages)	5
Cabbages (packages)	3
Cauliflowers (packages)	3
Mixed vegetables (packages)	1
Potatoes (bags)	19,270
Onions (bags)	836
Bulbs (packages)	36
Plants (packages)	71
Seeds (packages)	57
Trees (packages)	28
Wine casks, empty (number)	3,197

Fumigated—7 packages plants, 4 packages trees, and 72 wine casks.

Rejected—2bush. oranges, 86 bags potatoes, and 5 second-hand cases.

Overseas.

Federal Quarantine Act.

2,371 packages seeds, etc.

EXPORTS.

Federal Commerce Act.

945 packages citrus fruit, 1,131 packages other fresh fruit, 60,429 packages dried fruit, 4 packages preserved fruit, 2 packages jam. 14 packages honey, and 18 packages plants were exported to overseas markets. These were consigned as follows:—

London.

Apples	445
Dried fruit	55,600
Honey	14
Oranges	780

South Africa.

Dried fruit	975
-----------------------	-----

India and East.

Dried fruit	24
Apples	686
Plants	2
Oranges	1
Preserved fruit	4
Jam	2

New Zealand.

Citrus fruit	164
Dried fruit	3,800
Plants	16

Holland.

Dried fruit	30
-----------------------	----

ORCHARD NOTES FOR SOUTHERN DISTRICTS, AUGUST, 1924.

[By C. H. BEAUMONT, Orchard Instructor.]

Pruning should be completed this month if not before, and all cuttings picked up or burned. Make sure that no big saw cuts have been left untrimmed or without a coat of paint. Sharpen all the pruning tools and rub them over with some black lead or graphite and put away until again required.

See that all trees are thoroughly cleaned up and free from any harbors for the larvae of codlin moth.

Strawberry beds should be thoroughly dug and all runners and weeds cleared up. Where the plants have been affected by "wilt" dig them out and burn them. Give the soil a dressing of lime (about 10 cwt. per acre) and keep it worked clean for twelve months before using it for strawberries again. On the first sign of mildew spray the plants thoroughly with lime sulphur solution $1\frac{1}{2}$ gallons per 100 gallons of water; repeat this later if necessary.

Where trees have suffered badly from fungous pests during the past season, help them for the coming season by spraying with Bordeaux or lime sulphur, winter strength. Spray for red spider and woolly aphis. Oil emulsions are the usual remedies, but if you would like to try another way, use lime-sulphur, winter strength, with two pounds of caustic soda per 100 gallons added; this is a winter wash only.

Vines which have had scab or anthracnose must be cleared of rough bark and be swabbed with a solution of one gallon of sulphuric acid in nine gallons of water. A piece of sheep skin makes a good swab. Burn the bark scrapings. Some growers prefer the sulphate of iron wash. The method of mixing will be explained to any who write asking for same.

Those who intend to plant citrus trees later should have the ground prepared and have the trees ordered; make it clear to the nurseryman that the trees must be fumigated before being sent to you; scaly trees mean ruination. "Brown rot" seems to be very prevalent this year, and is spreading; try to check it by spraying with Bordeaux mixture; leave some of the trees without spraying to enable you to compare results. If the spraying marks the fruit and it becomes necessary to wash it, see that the water used for washing has a little bluestone in it. One pound per 100 gallons of water is the correct strength. This is required to prevent spread of "brown rot" in the cases.

It is time to formulate spraying programme for the spring. Use "spreaders."

WHEAT CROP COMPETITIONS.**THE MIDLANDS DISTRICT.**

The success which has followed the establishment of Crop Growing Competitions in the neighboring States of Victoria and New South Wales, and the results which have been secured in South Australia with a somewhat limited experience of this method of encouraging better farming, have resulted in an attempt being made to create wider interest in the idea. As a result of recommendations made by the Advisory Board of Agriculture last year, the Government decided to encourage Branches of the Agricultural Bureau to undertake these competitions. The Government offered to assist in securing suitable judges, to provide a rail ticket to enable the judges to travel to and from the place of competition, and to subsidise, subject to certain conditions, the amounts collected by Branches up to a limit of £25 in any one instance. The Government's assistance in this respect is conditional upon the competitions being carried out to the satisfaction of the committee appointed to supervise the competitions, and consisting of the Director of Agriculture (Professor A. J. Perkins), the Superintendent of Experimental Work (Mr. W. J. Spafford), the Chairman of the Advisory Board of Agriculture (Mr. W. S. Kelly), and the Secretary, Advisory Board of Agriculture (Mr. H. J. Finnis). They are also required to co-operate with neighbouring Branches to ensure that each competition shall cover as wide an area as soil and climatic conditions will allow. At each of the conferences of the Agricultural Bureau held this year, consideration has been given to the scheme, and six competition districts have already been formed.

On August 1st, the Committee of Management of the Midland Crop Competition District, which includes the country represented by the Branches of the Agricultural Bureau served by the lines of railway between Hamley Bridge and Spalding and Hamley Bridge and Farrell's Flat, met at Riverton for the purpose of finalising arrangements for competitions to be held this year. Mr. R. Whitelaw, of Stockport, occupied the chair, and there were present:—Messrs. F. W. Coleman (Saddleworth), A. M. Fuller (Tarlee), J. McInerney (Riverton), W. H. Lewcook (Clare), H. C. Atkins (Farrell's Flat), W. S. Kelly, C. J. Tuckwell, and H. J. Finnis (Secretary of the Advisory Board of Agriculture).

It was decided to offer a silver cup as first prize and medals as second and third prizes to the best three crops of 50 acres of wheat grown in the district and submitted for competition. Entries are to be in the hands of the Honorary Secretary of the competition (Mr. A. M. Fuller, Tarlee), or any one of the members of the Committee of Management (from whom entry forms can be obtained), not later than October 8th. A fee of 10s. per entry has been decided on. The entries are to be judged on the following scale of points:—

Apparent yield	60
Trueness to type	10
Freedom from disease	10
Freedom from weeds	15
Evenness of crop	5

The competition is not restricted to Bureau members; all wheat-growers in the the Midland district, are eligible to submit entries.

The various agricultural and horticultural show societies within the area represented by the competition are to be approached with the object of enlisting their support. It was pointed out by some of the members of the committee present that in addition to entering their crops in the Midland Crop Competitions, some of the members of the Branches of the Bureau were anxious to hold local competitions with entries restricted to members of their individual Branches. The Committee of Management view this proposal with favor, and expressed their willingness as far as possible to render financial assistance to Branches which desired to conduct these "competitions within competitions."

RIVER MURRAY HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR APRIL, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during April.	Per Cow during April.	Per Cow October to April.	Per Herd during April.	Per Cow during April.	Per Cow October to April.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1/C	34.40	28.83	19,713	573.05	5,332.25	820.73	23.86	204.39
1/J	20	16.30	7,474.5	373.73	3,249.09	371.08	18.55	149.37
1/L	20	14	6,825	341.25	4,057.80	332.67	16.63	178.82
1/M	21	15.23	7,573	360.62	2,849.84	381.95	18.19	145.51
1/R	16.97	11.97	4,604.5	271.33	3,247.61	249.25	14.69	158.97
1/T	15	12.33	8,165	544.33	3,612.77	446.93	29.80	185.00
1/Y	12.33	10.40	7,165.5	581.14	4,199.34	344.02	27.90	194.39
1/Z	17	16	9,555	562.06	3,755.75	452.82	26.64	173.06
1/DD	23.97	22.27	12,955.5	540.49	3,908.76	575.13	23.99	170.99
1/EX	14	14	8,625	616.07	4,431.22	441.11	31.51	207.46
1/FF	12	11.5	6,510	542.50	4,356.38	298.68	24.91	186.70
1/GG	14	14	8,970	640.71	4,814.13	448.84	32.06	219.70
1/HH	14.70	14.70	8,070	548.98	4,700.02	353.54	24.05	206.16
1/II	13	7	7,497	576.69	4,207.41	303.46	23.34	179.29
1/JJ	13.57	12.63	7,953	586.07	3,805.45	356.97	26.31	164.70
1/KK	14	12	6,420	458.57	4,124.31	315.43	22.53	184.64
1/LL	17	12	6,990	411.18	3,734.46	310.89	18.29	165.32
1/MM	22.67	21.67	10,802	466.23	3,994.08	533.28	23.04	190.06
Means	17.53	14.82	8,659.33	493.86	3,979.81	407.61	23.24	176.71

RIVER MURRAY HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS, MAY, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during May.	Per Cow during May.	Per Cow October to May.	Per Herd during May.	Per Cow during May.	Per Cow October to May.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1/C	35-16	31-81	24,302	705-40	6,037-65	1,031-91	29-35	233-74
1/J	18-26	13-26	6,958	381-05	3,630-14	344-59	18-87	168-24
1/L	18-26	13-23	8,344-5	456-98	4,514-78	391-07	21-42	200-24
1/M	21	15	7,734-5	368-31	3,218-15	390-79	18-61	164-12
1/R	17	11-90	5,250	308-82	3,556-43	279-10	16-42	175-39
1/T	14	10-58	6,553-5	468-11	4,080-88	372-68	26-62	211-62
1/Y	11	9-29	7,419	674-45	4,873-79	336-89	30-63	225-02
1/Z	17	14-58	9,351	569-25	4,325-00	421-04	25-68	198-74
1/DD	24	22-42	14,525	605-21	4,513-97	649-32	27-06	198-05
1/EE	15	12	7,331-5	488-77	4,919-99	387-11	25-81	233-27
1/FF	12-07	10-68	5,522-5	457-54	4,813-92	251-68	20-85	207-55
1/GG	16	16	10,633	664-56	5,478-69	478-25	29-89	249-59
1/II	13	11-19	13,705	1,054-23	5,261-64	529-92	40-76	220-05
1/JJ	13	13	8,013-5	616-42	4,421-87	378-44	29-11	193-81
1/KK	10	8-19	6,023	602-30	4,726-61	263-16	26-32	210-96
1/LL	15-55	14-26	8,049	512-97	4,247-43	358-07	22-83	188-15
1/MM	23	21	10,912	474-43	4,468-51	535-12	23-27	213-33
Means	17-25	14-61	9,478-06	549-36	4,531-49	435-24	25-23	201-94

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RIVER MURRAY HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS, JUNE, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during June.	Per Cow during June.	Per Cow October to June.	Per Herd during June.	Per Cow during June.	Per Cow October to June.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1/C	37-83	29-47	24,851-5	656-92	6,094-57	1,019-59	26-95	260-69
1/J	18	11-27	5,957-5	330-97	3,961-11	297-87	16-55	184-79
1/L	18	12-30	8,129	451-61	4,966-39	379-64	21-09	221-33
1/M	20-07	11-80	7,877	388-23	3,606-38	409-09	20-14	184-26
1/R	16-50	10-97	4,939	299-33	3,855-76	260-33	15-78	191-17
1/T	14	9-83	5,368-5	383-46	4,464-34	310-72	22-19	233-81
1/Y	11	6-90	5,235	475-91	5,349-70	219-82	19-98	245-00
1/Z	14-60	11-90	6,901-5	472-70	4,797-70	345-60	23-67	222-41
1/DD	24	19-10	12,978	540-75	5,054-72	557-83	23-24	221-29
1/EE	15	11-53	5,384	369-17	5,289-16	243-04	16-75	250-02
1/FF	13-97	10-50	5,848-5	418-64	5,232-56	250-41	17-92	225-47
1/GG	16	15-13	6,009	402-68	5,881-37	327-37	21-68	271-27
1/II	13	12-10	10,417	801-31	6,062-95	487-66	37-51	257-56
1/JJ	12	11-90	6,555	546-25	4,968-12	337-13	28-09	221-90
1/KK	13	10-17	6,257	481-31	5,207-92	252-58	19-43	230-39
1/LL	14	12-47	5,341-5	381-53	4,628-96	237-15	16-94	205-09
1/MM	23	21-07	9,859	428-66	4,897-17	505-61	21-98	235-31
Means	17-29	13-44	8,112-23	469-12	5,011-03	378-91	21-91	224-20

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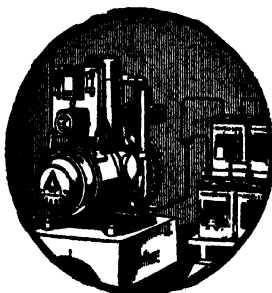
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MOUNT GAMBIER AND DISTRICT HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR JUNE, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during June.	Per Cow during June.	Per Cow August to June.	Per Herd during June.	Per Cow during June.	Per Cow August to June.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
2/A	13	4.50	1,416.5	108.96	4,880.44	74.07	5.70	205.87
2/B	8	5.30	2,750	344.88	7,575.94	129.99	16.25	284.12
2/E	12	7.70	3,052.5	254.37	6,321.53	147.97	12.33	268.40
2/H	23	16.53	9,757.5	424.24	6,259.18	420.44	18.28	253.99
2/I	13	10.70	4,886.5	375.88	6,414.55	247.52	19.06	258.56
2/J	12	7.80	3,675	306.25	7,897.79	167.10	13.93	327.19
2/K	25	13.70	8,389	335.56	5,782.00	358.04	14.36	226.10
2/L	22	16.80	7,486.5	340.29	4,685.41	374.48	17.02	214.51
2/O	30	20.03	12,717.5	423.92	4,871.84	538.26	17.94	190.91
2/R	15.47	12.87	10,566	682.50	10,074.74	464.34	29.99	402.79
2/S	6	5	3,618	603.00	7,865.44	174.96	29.16	360.99
2/T	11.13	6.93	4,703	422.55	7,666.89	206.81	18.58	295.95
2/U	17	7.60	7,077.5	416.32	6,771.88	320.30	18.84	268.39
2/V.	21.80	13.53	4,930	226.15	4,217.33	210.06	9.64	173.01
2/W	16	13.47	13,361	835.06	8,161.20	536.98	33.56	305.61
2/X	11.70	6.23	4,245	362.82	7,299.90	207.09	17.70	299.58
2/Cc	13	7.50	3,088	237.54	4,468.92	160.74	12.36	195.50
Means	15.89	10.36	6,219.32	391.44	6,290.42	278.84	17.55	251.91



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MILANG HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS, JUNE, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during June.	Per Cow during June.	Per Cow May to June.	Per Herd during June.	Per Cow during June.	Per Cow May to June.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
4/A	25	21.43	11,923.5	476.94	1,008.54	490.65	19.63	43.28
4/B	40	26.90	12,226	305.65	669.65	409.86	10.25	22.36
4/C	27	23.77	8,217	304.33	677.55	328.73	12.18	27.45
4/D	22	15.07	15,949	724.95	1,163.81	586.88	26.68	41.74
4/E	19.83	18.10	9,837.5	496.09	992.81	336.69	16.98	34.90
4/F	20	19	6,915	345.75	758.05	304.50	15.23	33.27
4/G	27	18.17	8,784	325.33	680.81	323.64	11.99	24.61
4/H	26	14.30	9,205	354.04	651.92	379.94	14.61	27.07
4/I	24.40	17.97	8,490	347.95	635.87	351.83	14.42	24.64
4/J	50	22.57	7,629	152.58	341.27	243.48	4.87	10.69
4/K	16	14.97	5,701	356.31	748.00	266.87	16.68	32.71
4/L	37	30.67	12,585.5	340.14	705.11	589.85	15.94	31.93
4/M	22	13.73	5,899	268.14	548.02	215.45	9.79	21.02
4/N	43	27.20	21,306.5	495.50	930.76	762.36	17.73	34.95
4/O	40.73	33.93	24,460	600.54	1,181.40	948.75	23.29	46.20
4/P	51.30	15.47	5,531.5	107.83	225.01	227.02	4.43	9.34
4/Q	46.47	30.37	12,137	261.18	644.25	481.45	10.36	25.19
4/R	15	8.10	5,829.5	388.63	607.70	259.06	17.27	27.03
Means	30.71	20.65	10,701.44	348.49	698.98	416.94	13.58	27.28

THIRD SUBSIDISED BULL SALE

(Under provisions of Dairy Cattle Improvement Act, 1921)

WILL BE HELD ON THE

Adelaide Show Grounds on Thursday Afternoon, Sept. 11th.

If you have bulls eligible to be offered under the Subsidy Scheme, do not miss the opportunity of selling them under the extremely favorable conditions offering.

If, however, you wish to buy a high-class herd sire, wait for the sale on September 11th, and then take advantage of the liberal gift offered by the Government, viz., 60% of the purchase price of the bull.

Whether you be buyer or seller the Department of Agriculture will be pleased to give you full information regarding the Subsidy Scheme.

GLENCOE HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR JUNE, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk	Milk.			Butterfat.		
			Per Herd during June.	Per Cow during June.	Per Cow October to June.	Per Herd during June.	Per Cow during June.	Per Cow October to June.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
3/A	17-60	14-07	8,763-5	497-93	6,482-05	371-84	21-13	274-89
3/B	16	10-57	3,087-5	192-97	3,090-24	135-33	8-46	135-62
3/C	12	10-43	8,214	684-50	5,701-06	368-00	30-67	233-65
3/D	10	9-87	5,567-5	555-16	5,201-17	228-25	22-76	201-35
3/E	14	12-07	5,533-5	395-25	5,262-84	256-58	18-33	228-58
3/F	9	5-13	1,846	205-11	4,673-47	84-56	9-40	194-37
3/G	12-40	7-57	3,113	251-04	5,391-66	139-08	11-22	206-69
3/H	16	5-37	2,563-5	160-22	4,179-83	99-87	6-24	163-89
3/I	14-47	8-67	3,121-5	215-72	4,677-85	147-67	10-20	198-99
3/J	17	10-07	3,025-5	177-97	3,316-30	133-64	7-86	151-59
3/K	22	16-10	7,439	338-14	4,755-04	351-52	15-98	203-49
3/L	24	12-03	8-636-5	359-85	4,110-50	396-26	16-52	170-74
3/M	14	9-60	2,457	175-50	3,859-59	118-93	8-50	167-55
3/N	16	11-43	5,335	333-44	4,407-91	243-36	15-21	191-66
3/O	17	11-90	1,539	90-53	3,850-42	72-34	4-26	146-91
3/P	15	10-67	1,986	132-40	2,848-17	102-82	6-85	113-18
3/Q	55	34-30	7,931	140-50	4,043-63	377-42	6-69	169-16
3/R	16-33	14-73	10,362-5	634-56	5,722-97	484-81	29-69	250-82
Means	17-66	11-92	5,028-97	284-84	4 490-69	228-46	12-94	188-38

PUBLICATIONS RECEIVED.

JOHNSTONE'S GARDEN CALENDAR.

The late Mr. A. Johnstone was a member of the Naracoorte Branch of the Agricultural Bureau for over 30 years. During that period he rendered valuable assistance to members and others by giving advice on horticultural matters, and contributing papers and monthly gardening notes. These have been collected and published as a tribute to his memory by the Branch of the Bureau of which he was so long a member. The booklet, containing 24 pages, can be had from Mr. E. S. Alcock, Kybybolite. Price, 2s.

"BANJO" PATTERSON.

Four volumes from the pen of A. B. ("Banjo") Patterson have been received from Messrs Angus and Robertson. They form part of a series of Australian writings published by the Cornstalk Publishing Company, Sydney, at 2s. 6d., 2s. 8d. posted. The volumes under notice are *An Outback Marriage*, *The Man from Snowy River*, *Rio Grande*, and *Saltbush Bill*, J.P. They are of handy size, and serviceably bound.

DAIRY AND FARM PRODUCE MARKETS.

A. W. Sandford & Co., Limited, reported on August 1st, 1924:—

BUTTER.—As was only to be expected at this time of the year, supplies are showing increases every week, but, unfortunately, production is somewhat lower than was anticipated owing to the need of more rain in many of the dairying parts. There have been slight fluctuations in values since our last report, and the tendency is for rates to get down to export parity. Values at the close of the month were:—Choiceest factory and creamery fresh butter in bulk, 1s. 5½d.; first grade bulk, 1s. 4½d.; second and third grade bulk, 1s. 2½d. to 1s. 3d.; best separators and dairies, 1s. 3½d. to 1s. 5½d.; fair quality, 1s. 2½d. to 1s. 3d. Store and collectors, 1s. to 1s. 2d. per lb.

EGGS.—Increasing quantities have been marketed each week during the past month, and as usual at this time of the year, values receded, particularly towards the end of the month, because of the acute drops in prices which occurred in the Eastern States. Values, it is hoped, are likely to steady shortly when picklers and pulpers commence operations in earnest:—Fresh hen, 1s. 2d.; duck, 1s. 3d. per dozen.

CHEESE.—There have been nice quantities consigned each week from a number of the factories in the South-East, and with the good demand existing, steady clearances have been effected throughout. Now that the pool has been disbanded there are, of course, heavier quantities being sold throughout the State and also interstate, and whilst for local trade values have maintained, lower rates have to be accepted for shipment. New makes, 9d. to 10d. per lb. for large to loaf; semi-matured and matured large and medium sizes 9½d. to 10½d. per lb.

HONEY.—The demand is hardly so strong at present as existed last month, and values are a shade easier than were last reported. Prime clear extracted in liquid condition, 5½d. to 5½d. Best quality candied lots, 5d.; lower grades, 3d. to 4d.; beeswax, 1s. 4d. to 1s. 4½d. per lb.

ALMONDS.—There are only small consignments coming forward at present, but these are being readily cleared at a shade firmer rates. Brandis realising 8d. to 8½d.; mixed softshells, 7d. to 7½d.; hardshells, 3½d. to 4d.; Kernels, 1s. 7½d. to 1s. 8d. per lb.

BACON.—Supplies from the factories have been well maintained, and it is pleasing also to report that sales have kept up well, resulting in no accumulation of stocks. Local hams, 1s. 4½d. to 1s. 5d.; Hutton's "Pineapple" brand rolls, 1s. 3d.; Hutton's "Pineapple" brand middles, 1s. 7d.; Hutton's "Pineapple" brand sides, 1s. 3d.; Hutton's "Pineapple" brand hams, 1s. 8d. to 1s. 9d. per lb.

LARD.—Hutton's "Pineapple" brand lard in packets, 11d.; in bulk, 10d. per lb.

LIVE POULTRY.—At the three auctions conducted each week throughout the month, there have been good attendances of buyers, but for medium sorts of poultry the bidding has not been so strong. Well-conditioned, heavy-weight birds, however, still realise good prices. We therefore, advise consigning. Crates obtainable on application. The following rates ruled at to-day's sale:—Prime roosters, 4s. 6d. to 6s. 6d. each; nice-conditioned cockerels, 3s. 3d. to 4s.; poor-conditioned cockerels, 2s. 3d. to 2s. 9d.; plump hens, 3s. 3d. to 4s. 6d.; medium hens, 2s. 2d. to 3s.; few pens of weedy sorts lower; geese, 5s. 9d. to 7s. 1d.; ducks, good condition, 3s. 6d. to 5s. 7d.; fair condition, 3s. to 3s. 4d.; turkeys, good to prime condition, 1s. 1d. to 1s. 3d. per lb. live weight; fair conditioned, 10d. to 11½d. per lb. live weight; fattening sorts lower; pigeons, 8d. each.

POTATOES.—Prime new potatoes at 7s. to 8s. 6d. per cwt. on rail, Mile End.

ONIONS.—Best brown onions at 16s. per cwt. on rail.

THE AGRICULTURAL OUTLOOK.

REPORTS FOR THE MONTH OF JULY.

The following reports on the general agricultural condition and outlook of the areas represented by the Government Experimental Farms mentioned below have been prepared by the respective managers:—

Eyre's Peninsula.—Weather.—There were 20 points of rain for the month, which fell over four raining days. Heavy fogs were experienced on seven mornings, and also a number of severe frosts. Crops are commencing to suffer in parts. Frosty weather is preventing early sown crops running up. Rain very badly needed. Natural feed is very backward, and also requires a soaking rain. Stock are all in very fair condition. Pests.—A few rabbits are about, and foxes are very numerous. Miscellaneous.—Water carting will soon be commenced again should there not very shortly be a good rain—about 4½ in. have been registered to date this year.

Kybybolite.—Weather has been comparatively fine, and dry, with some very heavy frosts, particularly early in the month. Several heavy fogs were noted later, and a useful light rain fell. Only 86 points were registered for the month, which is the lowest total on record for July during the past 18 years. The total of 11 in. for 1924 is below the average for the period of the year. Crops are growing very well indeed, and are well advanced for the time of the year. Wimmera rye grass has made splendid growth, as also has Subterranean clover, but the latter would do with a good rain soon. Pea crops have been sown and have germinated well. Turnip crops have given a large amount of feed to both sheep and young cattle during the month. Berseem gave a very good initial cut of feed. Natural feed is good, especially where land has received phosphatic fertiliser dressings. The latter were not affected by frosts, like the unimproved pastures. On account of the dry winter, natural clovers have not made the growth that grasses have.

Turretfield.—Weather.—Only 53 points of rain have been registered for the month and as these were only light showers they have been of little benefit. Frosts have been prevalent and severe; over 20 being experienced during the month. Early sown crops are holding, but the later sown have in many cases not come through the ground and are very thin and weakly looking. A good rain is badly needed. Feed is very scarce, the frosts having checked any growth. Stock.—Some nice lots of young lambs are to be seen, but feed is needed badly to enable them to develop. Pests.—Wire worms did some damage in the wheat crops, but the lucerne flea is not as bad this year as last. Miscellaneous.—Fallowing is proceeding slowly as the land in many places is too hard for proper working.

FOR SALE, STUDD JERSEY BULL, "SOLANUM'S CUB OF PELLA," A.J.H.B., 3260.

BORN MARCH, 1922. OF WHOLE FAWN COLOR.

Sire: "Maitland's Douglas," A.J.H.B., 2832.

Dam: "Solanum of Springhurst," A.J.H.B., 4394.

Solanum's official test is 10,516 lbs. milk, 563½ lbs. fat in 273 days, which is still a record for Jersey cow tested in S.A.

PRICE - - 60gns.

This Bull, if he passes the necessary health tests, is eligible for Government Subsidy of 60 per cent.

Apply to

W. P. ECKERMANN, "PELLA," EUDUNDA.

RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of and to the end of July, 1924, also the average precipitation to the end of July, and the average annual rainfall.

Station.	For July, 1924.	To end July, 1924.	Av'ge To end July.	Av'ge. Annual Rainfall	Station.	For July, 1924.	To end July, 1924.	Av'ge To end July.	Av'ge. Annual Rainfall
FAR NORTH AND UPPER NORTH.					LOWER NORTH—continued.				
Oodnadatta	—	1.43	3.32	4.94	Spalding	0.88	9.97	10.77	20.27
Marree	0.20	1.47	3.62	6.07	Gulnare	0.45	12.50	10.59	19.36
Farina	0.11	1.42	4.16	6.66	Yacka	0.39	10.20	8.71	15.48
Copley	—	1.35	5.18	8.39	Koolunga	0.25	9.00	9.06	15.89
Beltana	—	1.09	5.45	8.97	Snowtown	0.29	8.88	9.25	16.07
Blinman	—	1.92	6.70	12.53	Brinkworth	0.41	9.04	9.05	16.30
Tarcoola	0.04	2.66	4.34	7.74	Blyth	0.51	10.76	9.77	17.03
Hookina	—	2.39	7.95	13.46	Clare	0.71	15.23	13.25	24.68
Hawker	0.14	3.06	7.59	12.92	Mintaro	0.60	12.61	13.18	23.57
Wilson	0.08	3.25	6.46	12.58	Watervale	0.57	14.95	15.65	27.54
Gordon	—	3.19	6.70	11.55	Auburn	0.57	10.78	14.02	24.35
Quorn	—	3.56	8.11	14.21	Hoyleton	0.11	8.45	10.04	17.91
Port Augusta	—	4.10	5.68	9.67	Balaklava	0.20	7.58	9.28	15.95
Port Augusta West	—	3.71	5.60	9.71	Port Wakefield	0.25	7.76	8.12	13.28
Bruce	—	3.01	6.11	10.77	Terowie	0.27	5.51	7.50	13.82
Hammond	0.01	3.86	6.82	11.91	Yarcowie	0.35	5.58	7.95	14.22
Wilmington	0.04	6.77	10.65	18.29	Hallett	0.45	9.70	8.96	16.49
Willowie	0.11	4.82	8.47	12.57	Mount Bryan	0.65	10.99	9.24	16.81
Melrose	0.16	9.49	13.94	23.40	Koorunga	0.34	9.46	10.30	18.09
Booderoo Centre	0.27	6.75	8.96	15.65	Farrell's Flat	0.50	9.45	10.73	19.00
Port Germein	0.10	6.35	7.43	12.89	WEST OF MURRAY RANGE.				
Wirrabara	0.42	8.65	11.00	19.78	Manoora	0.49	9.93	10.35	18.93
Appila	0.26	8.51	8.24	15.00	Saddleworth	0.45	9.50	11.35	19.78
Cradock	—	2.72	5.67	11.52	Marrabel	0.53	10.67	11.17	19.78
Carrieton	0.03	2.83	7.32	12.90	Riverton	0.81	11.61	11.94	20.79
Johnburg	0.01	3.00	6.07	10.91	Tarlee	0.57	10.26	10.23	17.93
Eurelia	—	3.48	7.65	13.54	Stockport	0.48	9.62	9.40	16.63
Orroroo	0.11	3.87	8.00	13.73	Hamley Bridge	0.35	10.18	9.58	16.69
Nackara	—	3.82	7.18	11.99	Kapunda	0.76	11.53	11.43	19.89
Black Rock	0.19	4.31	7.34	12.75	Froeling	0.46	8.96	10.27	17.99
Ucolta	—	2.56	6.76	12.04	Greenock	0.62	11.31	12.22	21.68
Peterborough	0.40	6.33	7.57	13.53	Truro	0.76	11.34	11.53	20.21
Yongala	0.38	6.94	8.00	14.58	Stockwell	0.74	11.77	11.58	20.32
LOWER NORTH-EAST.					Nuriootpa	0.46	8.88	12.04	21.00
Yunta	0.10	1.69	5.16	8.88	Angaston	0.77	11.75	12.95	22.53
Waukaringa	0.16	2.58	4.97	8.54	Tanunda	0.61	11.31	12.95	22.24
Mannahill	0.12	2.71	5.02	8.67	Lyndoch	0.74	13.47	13.38	22.93
Cockburn	0.04	2.24	4.86	8.31	Williamstown	0.91	13.04	16.42	27.48
Broken Hill, N.S.W.	0.10	1.91	5.91	9.98	ADELAIDE PLAINS.				
LOWER NORTH.					Mallala	0.46	10.20	9.82	16.72
Port Pirie	0.04	6.89	7.93	13.55	Roseworthy	0.49	10.05	10.06	17.35
Port Broughton	0.29	8.57	8.50	14.29	Gawler	0.48	11.71	11.28	19.11
Bute	0.39	8.60	9.38	15.78	Two Wells	0.31	10.80	9.63	18.88
Laura	0.24	8.37	10.40	18.26	Virginia	0.40	10.26	10.22	17.32
Caltowie	0.67	8.71	8.44	17.20	Smithfield	0.53	11.06	10.16	17.24
Jamestown	0.75	10.83	9.79	17.89	Salisbury	0.46	11.00	11.14	18.51
Bundaleer W. Wks.	0.58	11.68	9.54	18.09	North Adelaide	0.75	16.60	12.74	22.37
Gladstone	0.50	11.27	9.06	16.29	Adelaide	0.63	13.62	12.75	21.08
Crystal Brook	0.18	10.63	9.09	15.95	Glenelg	0.92	11.53	11.24	18.45
Georgetown	0.91	12.66	10.56	18.55	Brighton	0.72	11.63	12.82	21.37
Narridy	0.60	8.76	9.37	16.37	Mitcham	0.75	14.87	14.78	24.26
Redhill	0.33	8.52	9.97	16.94	Glen Osmond	1.00	15.72	15.88	25.94
					Magill	1.13	17.58	14.57	25.35

RAINFALL—continued.

Station.	For July, 1924.	To end July, 1924.	Av'ge To end July.	Av'ge Annual Rainfall	Station.	For July, 1924.	To end July, 1924.	Av'ge To end July.	Av'ge Annual Rainfall
MOUNT LOFTY RANGES.					WEST OF SPENCER'S GULF—continued.				
Teatree Gully	0.78	17.40	16.85	27.77	Tumby	0.42	5.23	8.27	14.56
Stirling West	2.09	26.67	26.53	46.82	Carrow	0.19	4.22	7.92	14.42
Uraidla	2.25	26.32	26.98	44.23	Arno Bay	0.86	5.08	7.42	13.06
Clarendon	0.96	16.93	20.86	33.09	Cowell	0.08	3.55	6.84	11.63
Morphett Vale	0.62	14.16	13.88	22.90	Minnipa	0.07	5.57	9.37	15.51
Noarlunga	0.68	14.16	12.46	20.41	Ungarra	0.69	6.60	—	—
Willunga	1.04	15.48	15.87	25.99	Darke's Peak	0.41	6.29	—	—
Aldinga	0.56	12.15	12.56	20.44	Kimba	0.41	4.36	—	—
Myponga	1.15	15.88	18.35	29.80					
Normanville	0.92	13.62	12.88	30.70					
Yankalilla	1.02	13.54	14.70	23.31					
Mount Pleasant	0.81	12.39	16.07	27.28					
Birdwood	1.04	13.68	17.30	29.39					
Gumeracha	1.30	18.77	19.63	33.36					
Millbrook Reservoir	1.39	20.75	22.23	36.21					
Tweedvale	1.06	20.80	21.14	35.65					
Woodside	0.88	17.47	18.39	32.20					
Arableside	1.25	19.15	20.31	34.82					
Nairne	0.70	15.22	17.02	28.44					
Mount Barker	1.02	16.52	16.33	31.30					
Echunga	0.97	17.93	19.75	33.06					
Macclesfield	0.70	15.09	18.83	30.65					
Meadows	1.51	21.37	21.30	36.19					
Strathalbyn	0.52	10.78	11.38	19.37					
MURRAY FLATS AND VALLEY.					YORKE PENINSULA.				
Meningie	1.07	12.55	11.35	18.74	Wallaroo	0.45	8.25	8.83	14.15
Milang	0.12	7.63	9.27	15.45	Kadina	0.44	8.90	9.88	16.02
Langhorne's Creek	0.42	9.11	8.48	14.77	Moonta	0.40	9.66	9.62	15.35
Wellington	0.26	9.46	8.27	14.80	Green's Plains	0.45	8.35	9.49	15.86
Tallem Bend	0.31	10.09	8.28	14.68	Maitland	0.49	13.62	13.29	20.17
Murray Bridge	0.04	7.73	8.01	13.94	Ardrossan	0.36	6.87	8.45	14.18
Callington	0.11	8.00	8.91	15.49	Port Victoria	0.50	9.64	9.50	15.50
Mannum	0.29	6.17	6.76	11.66	Curramulka	0.44	9.70	10.94	18.20
Palmer	0.19	5.64	8.60	15.46	Minlaton	0.67	9.88	10.84	17.90
Sedan	0.22	5.99	7.03	12.27	Brentwood	0.57	8.67	9.49	15.83
Swan Reach	0.22	5.32	6.09	11.06	Stansbury	0.73	9.81	10.21	17.01
Blanchetown	0.15	4.05	5.76	10.09	Warooka	0.83	8.66	10.96	17.80
Eudunda	0.39	6.86	9.82	17.51	Yorketown	0.81	8.31	10.43	17.24
Sutherlands	0.35	4.90	6.09	11.20	Edithburgh	0.48	7.70	11.11	16.58
Morgan	0.10	4.27	4.98	9.30					
Waikerie	0.17	5.09	5.48	9.87					
Overland Corner	0.04	3.84	6.06	11.03					
Loxton	0.07	5.28	6.89	12.50					
Renmark	0.05	4.25	5.89	11.06					
Monash	0.10	4.89	—	—					
WEST OF SPENCER'S GULF.					SOUTH AND SOUTH-EAST.				
Eucla	0.43	2.87	6.38	10.01	Cape Borda	1.44	13.16	16.25	25.08
White Well	0.15	4.05	5.41	9.20	Kingscote	1.32	7.86	11.89	19.04
Fowler's Bay	0.12	4.95	8.04	12.14	Penneshaw	1.83	8.70	11.23	19.47
Penong	0.08	7.27	8.05	12.53	Victor Harbor	1.00	9.92	12.99	21.49
Ceduna	0.09	4.62	5.14	10.25	Port Elliot	0.83	10.14	12.07	20.12
Smoky Bay	0.06	4.60	7.89	10.98	Goolwa	0.60	8.32	10.75	17.89
Petina	0.18	5.07	7.71	12.95	Mindarie	0.25	6.87	—	—
Streaky Bay	0.16	6.01	9.39	18.07	Alawoona	—	6.29	—	—
Talia	0.46	6.87	8.99	15.32	Karoonda	0.44	8.32	—	—
Port Elliston	0.48	7.91	10.56	16.56	Sandalwood	0.45	7.22	—	—
Cummins	0.92	6.13	12.18	18.56	Meribah	0.16	6.33	—	—
Port Lincoln	0.80	7.97	11.03	19.66	Pinnaroo	0.47	7.65	8.62	15.50
					Parilla	0.26	7.03	7.93	14.51
					Lameroo	0.57	10.69	8.87	16.32
					Parrakie	0.40	8.16	7.69	14.58
					Geranium	0.58	9.54	8.98	16.62
					Peake	0.64	11.71	9.22	16.73
					Cooke's Plains	0.43	11.71	8.57	15.14
					Coomandook	0.72	11.87	9.95	17.49
					Coonalpyn	0.62	12.84	9.90	17.40
					Tintinara	0.62	11.07	10.50	18.70
					Keith	0.72	10.45	10.18	18.22
					Bordertown	0.76	10.98	10.88	19.39
					Wolsley	0.74	10.91	10.06	18.12
					Frances	0.90	11.08	10.83	19.73
					Naracoorte	1.05	12.75	12.80	22.25
					Penola	1.80	12.95	14.97	26.26
					Lucindale	0.94	14.63	13.46	23.00
					Kingston	1.51	14.32	15.00	24.51
					Robe	1.32	12.09	15.46	24.69
					Beachport	1.90	12.41	17.32	27.20
					Millicent	2.42	17.42	17.99	29.39
					Kalangadoo	2.21	18.18	18.69	32.47
					Mount Gambier	1.49	14.41	18.01	31.29

AGRICULTURAL BUREAU REPORTS.

INDEX TO CURRENT ISSUE AND DATES OF MEETINGS.

Branch.	Report on Page	Dates of Meetings.		Branch.	Report on Page	Dates of Meetings.	
		Aug.	Sept.			Aug.	Sept.
Alawoona	•	—	—	Geranium	•	30	27
Aldinga	84, 93	13	10	Gladstone	54	15	12
Allandale East	95	15	12	Glencoe	95	14	11
Amyton	•	18	15	Glossop	82	13	10
Angaston	•	—	—	Goode	•	13	10
Appila-Yarrowie	•	—	—	Green Patch	†	11	8
Arthburton	†	—	—	Gulnare	50, 54	13	10
Ashbourne	•	—	—	Gumeracha	•	18	15
Balaklava	•	9	13	Halidon	82	13	10
Balhannah	•	22	26	Hartley	†	22	—
Barmera	82	11	8	Hawker	•	12	16
Beetaloo Valley	48	—	—	Hilltown	•	—	—
Belalie North	•	9	13	Hookina	46	14	11
Berri	†	13	10	Inman Valley	•	—	—
Bethel	55	—	—	Ironbank	•	15	12
Big Swamp	A.M.	—	—	Kadina	•	—	—
Blackheath	84	15	12	Kalangadoo (Women's)	A.M.	9	13
Black Springs	56	12	9	Kalangadoo	†	9	13
Blackwood	93	18	15	Kangarilla	86, 93	—	—
Block M.	•	—	—	Kanmantoo	•	9	13
Blyth	•	2	6	Keith	•	—	—
Booloroo Centre	48	15	12	Ki Ki	•	—	—
Borrika	•	—	—	Kilkerran	65	12	9
Brentwood	•	14	11	Kimba	•	—	—
Brinkley	•	9	13	Kingston-on-Murray	•	—	—
Brinkworth	†	—	—	Kongorong	A.M.	11	8
Bundaleer Springs	•	—	—	Koonibba	•	15	12
Bute	•	12	9	Koppio	†	11	8
Butler	68	—	—	Kringin	74	9	13
Calca	•	—	—	Kybybolite	•	14	11
Cadell	•	—	—	Lake Wangary	•	9	13
Canowie Belt	•	—	—	Lameroo	82	9	13
Carrow	73	13	10	Laura	•	16	13
Cherry Gardens	86	12	9	Lenswood and Forest Range	†	—	—
Clanfield	•	—	—	Light's Pass	60	14	11
Clare	56	—	—	Lipson	•	—	—
Clarendon	†	—	—	Lone Gum and Monash	•	13	10
Claypan Bore	73, 82	13	10	Lone Pine	65	—	—
Cleve	•	13	10	Longwood	A.M.	—	—
Collie	•	—	—	Loxton	•	—	—
Colton	•	29	26	Lucindale	•	—	—
Coomandook	•	13	10	Lyndoch	62	14	11
Coonalpyn	†	15	12	McLachlan	71	—	—
Cradock	•	—	—	McLaren Flat	93	—	—
Crystal Brook	A.M.	9	13	MacGillivray	89	12	9
Cungena	•	—	—	Maitland	•	14	11
Currency Creek	•	15	12	Mallala	•	18	15
Cygnat River	•	14	11	Maltee	A.M.	15	12
Darke's Peak	A.M.	13	13	Mangalo	•	—	—
Denial Bay	•	—	—	Mannanarie	55	14	11
Edillilie	•	30	27	Marama	76	—	—
Elbow Hill	•	19	16	Meadows	•	13	10
Eurlia	46	6	3	Meningie	•	—	—
Farrell's Flat	53	15	12	Milang	•	9	6
Frances	•	30	27	Millicent	•	1	5
Gawler River	•	18	15	Miltalie	68	—	13
Georgetown	•	9	13				

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Minlaton	•	15	12	Rockwood	93	11	8
Minnipa	•	13	10	Rosedale	•	13	10
Monarto South	78	16	13	Rosy Pine	•	—	—
Moonta	•	15	12	Rudull	70	14	11
Moorak	•	14	11	Saddleworth	64	15	12
Moorlands	•	—	—	Saddleworth (Women's)	•	12	9
Moorook	82	18	15	Salisbury	A.M.	5	2
Morchard	45, 48	16	13	Salt Creek	•	—	—
Morphett Vale	•	14	11	Sandalwood	A.M.	—	—
Mount Barker	92	13	10	Shoal Bay	A.M.	13	10
Mount Bryan	†	—	—	Smoky Bay	•	—	—
Mount Byran East ..	•	—	—	Spalding	•	15	20
Mount Compass	•	—	—	Stockport	65	15	12
Mount Gambier	95	9	13	Streaky Bay	•	9	13
Mount Hope	69, 73	9	13	Strathalbyn	•	12	9
Mount Pleasant	93	8	12	Talia	†	9	13
Mount Remarkable ..	48	—	—	Tantanoola	A.M.	9	13
Mount Schank	•	12	16	Taplan	82	12	9
Mundalla	•	13	10	Tarcowie	52	12	9
Murray Bridge	†	12	23	Tarlee	65	—	—
Mypolonga	82	13	10	Tatiara	95	—	6
Myponga	•	—	—	Tweedvale	•	14	11
Myrta	78	9	13	Two Wells	A.M.	—	—
Nantawarra	63, 65	14	11	Ursula & Summertown	•	4	1
Naracoorte	94	9	13	Veitch	•	—	—
Narridy	•	16	13	Virginia	•	—	—
Narrung	•	16	13	Waikerie	84	—	—
Neeta	•	—	—	Wall	•	—	—
Nelshaby	•	9	13	Wanbi	•	—	—
Netherton	A.M.	15	10	Warcowie	43	10	8
New Residence	79	13	10	Watervale	•	—	—
North Booborowie ..	55	12	9	Weavers	66	11	8
North Bundaleer	•	—	—	Wepowie	47	12	9
Northfield	•	—	—	White-Yarcowie	†	18	15
Nunkeri and Yurgo ..	•	3	7	Wilkawatt	•	9	—
O'Loughlin	•	13	10	Williamstown	A.M.	6	3
Orroroo	•	—	—	(Women's)	•	—	—
Owen	65	15	12	Williamstown	65	15	5
Parilla	82	15	12	Willowie	•	13	10
Parilla Well	82	18	15	Wilmington	•	13	10
Parrakie	•	—	—	Windsor	•	—	—
Paruna	•	—	—	Winkie	80	—	—
Paskeville	A.M.	15	12	Wirrabara	52	—	—
Pata	•	—	—	Wirrega	†	—	—
Penola	†	2	6	Wirrilla	•	9	7
Petina	73	23	27	Wirrulla	71, 72	—	—
Pinnaroo	A.M.	15	12	Wolowa	•	—	—
Pompoota	•	13	10	Wookata	†	—	—
Poochera	73	2	6	Wudinna	•	—	—
Port Broughton	•	15	12	Wynarka	•	—	—
Port Elliot	93	20	17	Yacka	†	12	9
Port Germein	•	16	13	Yadnarie	72	12	9
Pygery	•	9	13	Yallunda Flat	†	9	12
Ramco	†	11	8	Yaninee	•	—	—
Rapid Bay	92	2	6	Yeelanna	A.M.	9	13
Redhill	51	19	16	Yongala Vale	•	—	—
Rendelsham	•	13	10	Yorketown	•	—	—
Renmark	•	14	11	Younghusband	•	14	11
Riverton	•	—	—				
Riverton (Women's) ..	•	—	—				

* No report received during the month of July.

† Formal.

‡ Held over until next month.

A.M. Annual Meeting.

THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

Every producer should be a member of the Agricultural Bureau. A postcard to the Department of Agriculture will bring information as to the name and address of the secretary of the nearest Branch.

If the nearest Branch is too far from the reader's home, the opportunity occurs to form a new one. Write to the department for fuller particulars concerning the work of this institution.

REPORTS OF BUREAU MEETINGS.

UPPER-NORTH DISTRICT.

(PETERBOROUGH AND NORTHWARD.)

EURELIA.

June 18th.—Present: eight members.

SHEEP ON THE FARM.—Mr. W. Canny read a paper. In this district the feed did not come away early, which made it difficult for farmers to compete in the early fat lamb markets. The Merino with a large frame and good fleece was the most suitable class of sheep. In laying the foundations of a flock, the farmer should not hesitate to spend a few extra pounds in purchasing a good ram. Size should be an important point, and the animal should stand well on legs of good bone. "See that the head is of a strong, masculine type; a good, clean face, with well-set horns. I am not opposed to a fair amount of 'leather' on the front of the ram, but the last fold should not be too close to the chin." The paper continued:—"Plain-necked rams very seldom carry a good, dense fleece. The wool, of course, should have a long staple, and be of the best quality. With the aid of a good ram and a careful examination of the sheep every year before shearing, the standard of the flock can be raised. Put the sheep through the race, and brand and draft off all aged ewes, and also those with inferior wool and all that are not of fair, average size. Shear these ewes separately and brand them with a distinctive private mark, so that they can be killed for household use or sent to market. If this is not done, the farmer will often frequently kill or perhaps sell ewes that should be kept for improving the flock."

HOOKINA (Average annual rainfall, 12in.).

July 10th.—Present: eight members.

CEMENTING IRON TANKS.—Mr. H. V. Henschke read a paper dealing with this subject, in the course of which it was stated it was possible to repair, cheaply and efficiently, old iron tanks that leaked by applying a thin coat of cement to the bottom and sides. Netting should be fastened to the inside by punching two holes through the iron about every 2ft. and twitching it on with thin wire. About 2in. of concrete should then be placed on the bottom, the concrete being made up of one part of cement to five of gravel. The first coat on the sides should be made of three parts of sand to one of cement, the next and last coat being in the proportion of two of sand to one of cement. That should be put on both the bottom and sides. As soon as the cement set, water could be put in the tank, and if it could not be filled immediately, the cement should be damped every day to keep it from drying too quickly.

MORCHARD (Average annual rainfall, 13.50in.).

June 14th.—Present: 10 members and visitors.

Mr. N. S. Lillecrapp read a paper, "The Barometer on the Farm," that had been contributed by the Rev. W. Trengove.

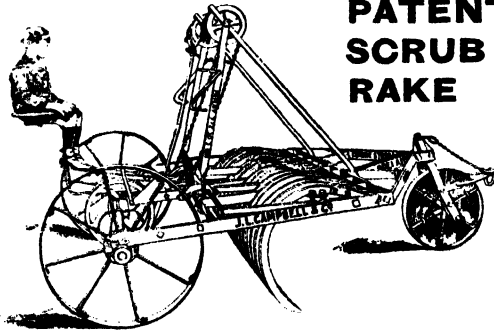
MIXED FARMING.—Mr. H. Tilbrook, in the course of a short paper on this subject, said one man could not successfully manage a mixed farm, because by the time the cows were milked, the milk separated, the pigs fed, the sheep inspected,

and the team harnessed, it would mean a late start in the morning. Too many sidelines on a one-man farm usually meant ill-kept horses, poor cattle, half fed pigs, and poor sheep. The speaker favored one line, and that one managed thoroughly. Mr. B. McCallum favored a flock of sheep and a few cows, which he thought would be an asset to the farm. Other members spoke in favor of mixed farming. Mr. Tillbrook, in replying, said that he kept a flock of sheep and a few cows, but it meant the employment of additional farm hands.

WEPOWIE (Average annual rainfall, 13in. to 14in.).

July 14th.—Present: seven members.

FALLOWING.—Mr. W. Gregurke, who read a paper dealing with this subject, said no definite system for the preparation of fallow that would suit all classes of soil and climatic conditions could be suggested, but the following practice had proved very satisfactory in that locality, where the farmer's main object was to grow wheat. If stubble land was to be fallowed, the straw should, if possible, be burned towards the end of the summer, but if the summer had been wet and the straw contained green summer growth, burning should be delayed until the commencement of frosty weather. Fallowing should be commenced as soon as seeding was completed, providing the land was not too wet nor too hard to make a good job. Deep ploughing was not advisable unless weeds had made a strong growth—4in. to 4½in. being quite deep enough for that district. Shallow fallow provided the best opportunity for the germination of weeds. As the season advanced and weeds made a good start, the depth of ploughing could be slightly increased, but deep fallowing was not necessary for growing good crops in that district. The first land fallowed should be harrowed across the ploughing about the end of July. The fallowing should be finished by the end of August, and the harrowing by the end of September. All land fallowed should have at least one good rain on it before it was harrowed down. After the paddock had been harrowed, sheep should be pastured on the land to keep weeds in check. All fallow should be cultivated before harvest, and the land kept clean with sheep



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during summer and early autumn. Should there be too much growth for the sheep, the cultivator should be worked, but he did not favor summer cultivating when summer weeds could be destroyed by other means. In the discussion that followed, Mr. W. Gregurke said wheat farming could not be conducted successfully without sheep, because they not only kept weeds in check, but also added to the fertility of the soil. Mr. L. Jasper favored cultivating or shallow ploughing for stubble land.

MORCHARD, July 12th.—Twenty-two members and four visitors attended the annual meeting. The Honorary Secretary (Mr. W. G. Martin) read the annual report, and officers were elected for the ensuing year. A paper, "High Tariff and Farmers' Products," was contributed by Mr. C. Loughbottom, and a keen discussion ensued.

MOUNT REMARKABLE, July 16th.—An address, "Top Dressing Pastures," was given by Mr. S. R. Cockburn, and an instructive discussion followed.

WARCOWIE, July 15th.—A short paper, "Fallowing," was contributed by Mr. J. Ryan, and a good discussion ensued. The Honorary Secretary (Mr. A. Crossman) read the annual report, and the officers were elected for the ensuing year.

MIDDLE-NORTH DISTRICT.

PETERBOROUGH TO FARRELL'S FLAT.)

BEETALOO VALLEY (Average annual rainfall, 23.50in.).

July 12th.—Present: 10 members and three visitors.

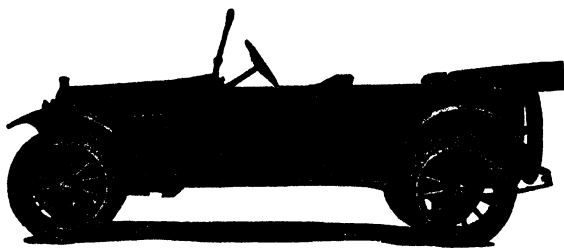
The Honorary Secretary (Mr. F. Bartrum) presented the annual report, and the officers were elected for the forthcoming year.

WELL SINKING.—In the course of a paper dealing with this subject, Mr. J. Bird said the site for a well from which stock were to be watered should be as near the stables as possible, but if water were required for irrigation the highest point of the land to be irrigated should be chosen for the well. A windlass would be necessary, and it could be made from a piece of gum or mallee about 8in. in diameter with the length according to the width of the well. A good wire for hauling purposes would prove most serviceable, and for lowering timber into the well a piece of hemp rope could be used. The well bucket could be made from a 5-gall. oil drum. Tools required for the work were two miner's picks, a small, short-handled shovel, crowbar, drill, and hammer. When sinking a well, it was necessary to have plenty of room in which to work, say, 6ft. x 4ft., to allow space when installing a pump. Care should be taken to keep the sides straight and the well square, then there would be no danger when putting in a pump of the pipes running into the sides. If rock was struck, blasting might become necessary. When using explosives under water, it was advisable to grease the fuse to prevent a misfire. If the well was inclined to fall in, it would be necessary to timber the sides with 6in. x 2in. jarrah, being careful to pack the earth thoroughly behind the timber to keep it firmly in position.

BOOLEROO CENTRE (Average annual rainfall, 15.83in.).

May 16th.—Present: 11 members and visitors.

FALLOWING.—In the course of a paper dealing with this subject the Honorary Secretary (Mr. M. J. Carey) said fallowing was the most important operation on the farm, for the success of the wheat crop depended to a great extent on the thoroughness with which it was carried out. The main object in ploughing the land was to conserve moisture, and to secure a growth of weeds. Not even in one district, much less for the whole of the State, could any hard and fast rule be laid down as a guide. Fallowing should be done early, as soon after seeding as possible, and the farmer should use that particular kind of plough which best suited his soil. The great advantage of early ploughing was that it exposed the soil to the atmosphere for a longer period, and the winter rains readily penetrated to the subsoil, to be conserved for future use; moreover, in early fallow, it was easier to obtain consolidation of the seed bed. With late



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spring fallowing the winter rains were lost by evaporation and surface drainage. Summer cultivation had been adopted in some areas with satisfactory results, and that practice favored the germination of rubbish which could be destroyed when fallowing. When deciding the depth of ploughing, the farmer should be guided mainly by the character and depth of the soil. In that district the average depth was probably between 3in. and 4in. Deep ploughing was undesirable where the soil was shallow or in limestone country. No benefit was derived by bringing clay subsoil to the surface. Generally, provided the soil was of sufficient depth, it would be found that deep working was better suited in drier districts. In 1911 experiments were carried out at Hammond on a system of dry farming, with an average rainfall of 9in. The returns from the land ploughed 6in. deep were over 3bush. to 4bush. more per acre than the return from plots ploughed 4in. deep. His opinion was that deep ploughing did not pay. Extra time was involved, ploughing was more expensive, and if a dry spring were experienced, one was unable to secure a firm and consolidated seed bed. If sufficient land was available, he favored a three years system of rotation, and it would be an advantage, to every fifth fallowing of a paddock, to plough a little more deeply than the previous ploughings. Farmers who had land in districts where the soil washed into gutters should plough in lands say 30 yards wide, and up and down hill, so that there would be several furrows to take the water instead of only one.

A further meeting was held on June 13th, when a report of the address given by the Director of Agriculture (Professor Arthur J. Perkins) at Wepowie was given by Mr. M. J. Carey.

GULNARE.

June 18th.—Present: 16 members.

HORSE BREEDING.—Mr. G. Hin read the following paper:—"Past experience of breeders proves that the Clydesdale is the most serviceable and best type of horse for South Australian conditions. Too much attention is being paid at the present time to excessive quality, and by doing so breeders are losing both muscle and quality. The breeder must produce the animal that is bringing the best market value, and to-day that horse is the good, weighty animal type and formation. Good feet and legs are most essential. Always avoid the animal with small round feet, set up high at the heels. Look at the joints. These should show out neatly and clearly, the cannon bone being as flat as possible and placed fairly in the centre or straight under the knee. The fetlock joints should be of medium length, but not standing back and down too much. See that the hocks are broad and clean. There should be no soft lumps in front or in the centre of the hock. Choose the horse with large full eyes, broad between the eyes, and with ears well forward, broad across the jaw, but fine at the muzzle, with nice open nostrils. See that a shapely head is well set on to a good length of neck, well up at the withers, good depth of shoulders, and broad across the chest. Take notice that the legs are not set on to the outside of the chest, otherwise the horse will be faulty in action. The back should be short, ribs deep and well sprung. There should be a good length of hind-quarter well let down at the thighs and showing plenty of thickness. See that the horse moves easily and cleanly. A good walker is to be admired, especially in a stallion or show ring animal. See that the horses receive good attention and that they are provided with warm, clean stables. In districts where there is no natural shelter, farmers should erect a straw stack or two each year. *Breeding.*—During the mating season, keep the mares in good condition. Feed the foal well, especially if it shows promise of developing into a good animal. Breeding is an important part of successful horse raising, but feeding is the greatest factor. To raise stock and get them to market at an early age is the most profitable form of stock breeding. Tempting offers for good fillies from the best mares should be refused, because later, they will be the mares that will show improvement in the horses on the farm. Try to raise better animals than anyone else. This district has always been noted for the good horses it has produced, and farmers should give their patronage to the man who buys the best stud horse, even if the fee be a few pounds extra. This will help to raise the standard of horses in the district."

REDHILL.

June 17th.—Present: 15 members.

FARM MANAGEMENT.—Mr. R. B. Scholefield read the following paper:—"The farmer now-a-days, like every business man, finds that it requires more capital to carry on than it did a few years ago; and to cover working expenses and show a profit, increased production is absolutely imperative. With the aid of superphosphates, proper tillage of the soil, and judicious selection of seed wheat, splendid results are being obtained, but more can be done to further increase production by persevering with new varieties of wheat, and from this source the maximum production will possibly be obtained. The farmer may be obtaining good results, but is possibly losing in some other way. One cause of a leakage may be lack of method. The man who is not methodical in his work, and fails to see that others about the place are methodical, loses much valuable time, to say nothing of the irritation caused through want of a little thought; 'a place for everything and everything in its place' is a good motto. I have visited farms and noticed machines and vehicles left under small mallee trees. Farm implements are too costly to be exposed to the weather longer than is absolutely necessary, and immediately after use they should be carefully overhauled and put away in a perfectly weather-proof and poultry-proof shed. The stables, cow sheds, and pigsties should be dry and stoned paved, thereby saving much unnecessary labor and inconvenience. In many instances the horse yards, stables, etc., are a bog in the winter time, which could easily have been prevented by stone paving. Every farmer should carry a small pocket book for the purpose of jotting down small items about the farm that require attention, and as opportunity occurs they should be attended to. From experience, I have found it a

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great help to keep a diary. The notes will not only be found interesting at the end of the year, but will often be very useful for reference purposes. Much could be accomplished by the farmers if they worked more on the group-system; for instance, a few adjoining farmers could purchase a good draught stallion and by breeding from their selected mares could thus maintain a good type of farm horse. Likewise, the same group could purchase a good bull of a well-known pedigree, thus keeping up the standard of the dairy herds. Pigs are a much-neglected industry, especially when one notices in the daily papers, best rashers 2s. per lb., hams 2s. per lb., and it is quite obvious that much more could be done with this particular sideline of the farm."

TARCOWIE (Average annual rainfall, about 15½in.).

May 13th.—Present: 13 members and visitors.

CARE AND MARKETING OF FARM PRODUCE.—Mr. J. McCarthy read the following paper:—"The main items to be taken into consideration under this heading in our district are cream, butter, and eggs. The former has in recent years become an industry of its own, principally because of the number of butter factories that have been established at various centres within easy reach of the dairying districts. However, in spite of the keen competition by the number of factories there still seems to exist a good deal of dissatisfaction regarding the returns received. I do not wish it to be thought that my remarks apply to all cases, but there are a number of instances where cream is forwarded to the factory in a very ripe condition, and this, in my opinion, is due principally to holding the cream too long. While the cream is being gathered it should be kept in an earthenware dish or jar in a cool place, and should be stirred well every day, and a little salt added. The cans should be well cleaned and scalded, and when sufficient cream has been collected it should be well mixed when put into the can for transport. The cans should not be filled to their full holding capacity, 2in. from the top should be allowed for splash, and in summer time 3in. should be allowed. If a can is so full that the cream runs over the side the result is that it is blown, and arrives at the factory in a very bad state, and is sometimes not fit for market. Cleanliness and the greatest of care are essential to obtain the best results from this industry. Eggs.—Many people are of the opinion that eggs are anything in a shell, and to a certain extent they are correct, because no one can tell by an ordinary examination whether the egg is good or bad. To-day the price of eggs is in the vicinity of 2s. per dozen, and if a person buys a dozen eggs and three are bad, the balance are expensive. This, in my opinion, can be easily avoided. Cut a piece of cardboard to the size of an egg, and hold the egg up to a light, when the nature of the egg can easily be seen. I do not mean that this should be done to all eggs, but where there is any doubt it could be easily removed in this manner. Eggs are frequently submitted for sale in a very dirty state, and also in various sizes. To the average seller of eggs this may not seem a matter of very great importance, but I maintain that it is a point that should be observed. If nests were placed in a position where the sun will not shine on the eggs, and they are collected every day, kept in a cool place, and submitted for sale twice every week during the summer months, the standard of the eggs, and likewise the market value, would increase."

WIRABARA (Average annual rainfall, 18.91in.).

June 14th.—Present: 13 members.

SOLDERING.—The following paper was read by Mr. P. J. Curnow:—"Soldering can be readily learned by the novice. To be able to repair tanks, guttering, roofs, and pipe work is of considerable value to the handy man. A large kit of tools is not necessary. A suitable soldering iron weighing from 12ozs. to 16ozs. is most in request by the amateur. The term 'soldering iron' is a misnomer. The copper bit alone should be the above weight, and is fitted into an iron haft in different ways. Where outside work, such as tank work, is being carried out, copper bits up to 2lbs. or 3lbs. in weight are used; the larger sizes retain the heat longer. Soldering irons, when purchased, are not ready for use. Unless the bit is 'tinned' solder will not follow it on a piece of work. To tin the iron proceed as follows:—Heat the copper portion to a dull red, then rapidly, with a fine-grained flat file, rub over the four facets of the iron, and while they are

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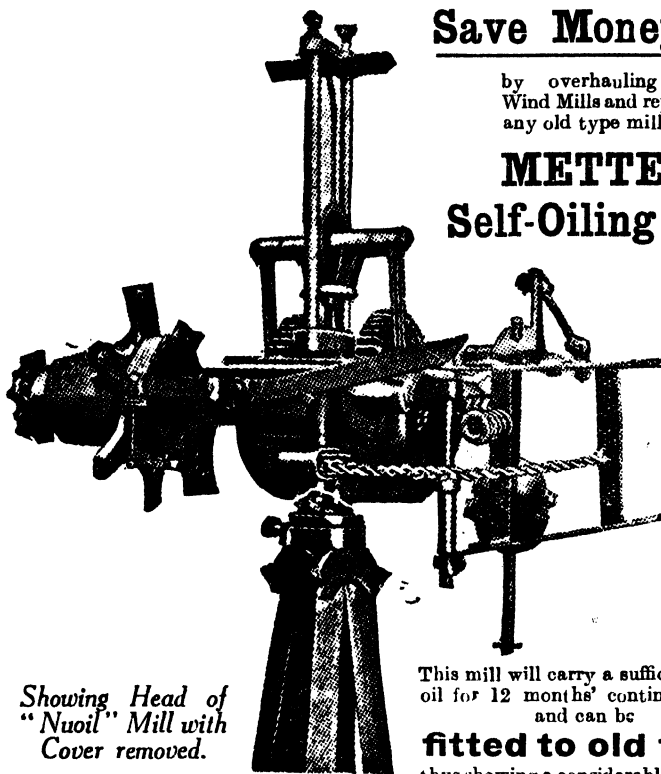
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bright dip into a hollow in a block of sal-ammoniac into which a piece of hot solder has been dropped, and rub the four facets in turn very vigorously. After a few moments the copper point will be bright, and tinned for an inch or more from the sharp end. Until the tinning is burnt off—generally by over heating—the iron will do good work. To assist in retaining the tinning, but principally with the object of cleaning the iron each time it is taken from the fire, make up the following solution in half a bottle:—Place in the bottle 2in. or 3in. of rain water, drop in about half a teaspoonful or a little more of shavings of sal-ammoniac, add to this a few drops of spirits of salts, and allow it to dissolve. When taking the hot iron from the fire, dip the copper point quickly in and out of the above solution, when the former will show a point like silver, and will do excellent work if the iron is at the right temperature. To ascertain this, hold the iron near the face. Experience will soon teach the right heat to do the best work. Many amateurs spoil their work by using an iron that is too cold. Before proceeding to work, a flux to suit the job in hand must be prepared. Various fluxes are used for different metals. ‘Killed’ spirits will solder tinware and new galvanised iron. When the latter becomes dull, spirits of salts alone will do the work. For brass and copper, resin is the best flux, although spirits of salts or even ‘killed’ spirits will sometimes do good work, but the job in hand has to be tinned itself, which is a tedious process where the solder will not readily adhere to the surface to be treated. For all practical purposes, ‘killed’ spirits and spirits of salts will do all the average amateur’s work. To ‘kill’ spirits of salts, proceed as follows:—Into an open-mouthed bottle place about 2in. or 3in. of pure spirits of salts. Drop into this, scrap zinc—perforated zinc will do, or even strips of galvanised iron. Place the bottle in the open air to avoid the fumes. After the acid has ceased boiling, take out the balance of zinc and place the liquid in a glass-stoppered bottle. To increase the volume, add one-third of rain water. This tends to lessen the fumes when working, and does not lessen the value of the acid as a flux. A small quantity of sal-ammoniac shavings will make the spirits into a better flux. Keep this preparation and spirits of salts away from tools of all kinds, even where a glass stopper is used fumes seem to escape and rust steel tools anywhere nearby. To repair work of all kinds, rust and dirt, and particularly grease, must be removed. Solder will only adhere to a clean surface. Sandpaper and an old file may be used for cleaning. When ready, dip a feather in the flux to be used, wet the place (say, a hole in an utensil) thoroughly, drop a little solder from a hot iron, and then with the latter neatly spread the solder over the place, when a good mend should result. When long strips of metal have to be united, say, over a tank bottom, both edges must be wetted with the right flux. Sometimes a rivet through the work will help to hold two pieces, as in tank work, while the soldering is being carried out. Tin and galvanised ware of all kinds can readily be repaired by the amateur. Leaks in chipped enamel ware can be soldered if the leaky place is brightly scraped. Even iron ware can be soldered, but as a rule such mends or joints are not too strong. Aluminium ware cannot be soldered except by special fluxes or solder. For heating a soldering iron, an old nail can with holes punched in the sides with a larger opening 2in. from the bottom on one side, to admit the iron, makes a good furnace. Charcoal gives a good heat, particularly where a draught can blow through the tin. It is a mistake constantly to use a forge, especially using the blasts, to heat an iron. The copper bit becomes pitted, and soon burns away.”

GLADSTONE, June 13th.—The annual meeting of the Branch was held at the residence of Mr. C. H. Lines. The annual report was read by the Honorary Secretary (Mr. J. T. Bergin), after which the officers for the ensuing year were elected. Mr. Lines tabled a cultivator share, which it was claimed was an excellent weed destroyer. At the close of the formal business, Mr. Lines gave a practical demonstration of dressing a pig for bacon curing. At the conclusion of the meeting, members and visitors were entertained at supper by Mr. and Mrs. Lines.

GULNARE, July 16th.—Forty members and 22 visitors attended the meeting, when Mr. A. H. Robin, B.V.Sc. (Veterinary Officer of the Stock and Brands Department), gave a veterinary demonstration and delivered an address, “Common Ailments of the Horse.”

MANNANABIE, July 10th.—The meeting took the form of a "Question Box," when several subjects of local and timely interest were discussed.

NORTH BOOBOROWIE, May 15th.—The Manager of the Booborowie Experimental Farm (Mr. E. A. Bristow) delivered an address, "Hand Feeding Sheep."

A further meeting was held on June 18th, when a paper, "Training a Sheep Dog," was contributed by Mr. W. L. Brown. An interesting discussion followed.

LOWER-NORTH DISTRICT.

ADELAIDE TO FARRELL'S FLAT.)

BETHEL.

June 10th.—Present: 11 members.

THE ENGINE AND THE CHAFFCUTTER.—In the course of a paper dealing with this subject, the Honorary Secretary (Mr. E. R. Peltz) said the majority of farmers had a stationary engine to drive the chaffcutter, crusher, or circular saw, and for the purpose of convenient working the engine should be placed in a separate shed built of stone, about 12ft. x 10ft., to provide room for petrol and oil. The engine should be kept free from spent oil and dust, otherwise its life would be considerably shortened. From the engine, a fairly long belt should be run on to a shafting, from which the other machines were driven with belts. The best plan was to have the engine-room in the middle, the chaffcutter, on one side, the crusher on the other, and the circular saw next to the crusher, and work the belts on to the shafting. On the saw bench, arrangements should be made so that the saw could be taken off and a grinding stone placed on the same pinion. He thought a kerosene engine of about 6h.p. would be the best engine to run on a farm. An oil engine could be run more cheaply.

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but it always took too long to start. He preferred large pulleys, because it was not necessary to have the belts very tight, and the work would be easier for the engine. Mr. E. Vogt stated that an oil engine was the best and cheapest to run, and considered that 6h.p. engine would be required for the chaffcutter if the belts were run off a shafting. Mr. F. Schmidt favored the superdiesel engine, and said that by crossing the belts slipping would be reduced to a minimum.

BLACK SPRINGS.

April 14th.

Fourteen members attended the April meeting, when a paper, "Farm Cows," was read by Mr. J. Hudd.

A further meeting was held on May 13th, when the Hon. Secretary (Mr. C. M. Hudd) contributed a paper, "Co-operation."

HOW TO MAKE FARM LIFE ATTRACTIVE.—At a meeting held on June 17th, Mr. A. Siegert read the following paper:—"A man who farms merely for monetary gains will never be attracted by rural life, and, therefore, the work will become a drudgery instead of a pleasure. The horses should be one of the greatest attractions on the farm, for every true farmer is a lover of horses. He will derive pleasure in caring for the horses, and keeping them in good condition. One man should not attempt to look after and work too many horses, otherwise they will be neglected and the farmer will lose interest in looking after them. If a farmer has no sons, he should employ labor during the busy seasons of the year. Every farmer should take an interest in some side line of the farm. On most farms there will be found sheep, cattle, fowls, pigs, and horses. Some people keep these because they are an absolute necessity on the farm, but to make life attractive, a farmer must take a special interest in some of these lines. Every farmer should have recreation, but this should not be overdone, otherwise work will be neglected. The woman should have a conveyance that they can use, independently of the farmer, for he cannot always get away from his work in the busy times. There is one thing every farmer should enjoy, and that is reading in the winter evenings. To read a good book is not only a pleasure, but also an education. A farmer should be a member of the Agricultural Bureau, and if he takes an interest in it, he will not only find it interesting, but he will also derive a lot of useful information which will help with the work on the farm. Whatever work is done on the farm should be done thoroughly."

CLARE (Average annual rainfall, 24in.).

May 16th.—Present: 12 members.

THE USE OF LIME.—The Honorary Secretary (Mr. W. H. Lewcock) read the following paper:—"The practice of applying lime to land is a very old one, especially in the older countries of Europe. In Australia it is a very uncommon practice, especially in the agricultural areas, the regular liming of wheat lands being practically unknown. However, the use of lime and gypsum has become more prevalent amongst vignerons and orchardists, being mainly used to correct soil acidity and soil texture. Most soils will derive benefit from an application of lime even when lime is present in fair quantities. This is usually due to the fact that lime is present in the form of hard limestone, and is not readily available. By the term "is not readily available" it is meant that limestone is not in a form to be readily broken down by soil acids, and, therefore, is of no use to either plant growth or soil fertility. The soils most benefited by an application of lime may be classed as follows:—(1) soils deficient in lime; (2) sour soils on which it acts as a sweetening agent, neutralising the soil acidity; (3) stiff clay soils; (4) sandy soils; (5) land which is to be sown to a leguminous crop or crops which specially benefit by an application of lime, i.e., maize, or to a crop which is to be ploughed under for green manure. Limestone or carbonate of lime (CaCO_3) varies much in appearance and texture. It varies from hard rock to soft white powder matter, and varies greatly in purity through the admixture of sand and clay. One of the purest forms of limestone or carbonate of lime is marble. When a fairly pure form of limestone is burnt about 14 per cent. of its weight is lost in the form of carbon di-oxide (CO_2), when fairly pure quick lime (CaO) is slaked it gains in weight owing to the

addition of water. Thus one ton of fairly pure carbonate of lime (CaCO_3 , marble) produces when burnt about 11½ cwt. quicklime (CaO). This quicklime (calcium oxide), when slaked with water produces about 14½ cwt. slaked (calcium hydrate CaO_2H_2). Or one ton of quicklime equals about 26½ cwt. of calcium hydrate. It is well-known how quicklime when left exposed to the air crumbles into powder. It is also well-known that bags of quicklime swell when exposed to the air and then burst. In a moist atmosphere the production of (CaO_2H_2 , slaked lime) is very rapid, but in ordinary slaked lime the change is a double one, for in addition to calcium hydrate being formed, carbon di-oxide is absorbed from the air and forms calcium carbonate. Quicklime, or slaked lime, when left exposed to the air, reverts back in time, through the absorption of carbon di-oxide, to the carbonate form. Lime, i.e., quicklime, chalk, marl limestone, all contain small quantities of phosphates, and thus provide plant food. But the most important chemical effect is that of acting as a basic material. They neutralise the vegetable acids produced by the decay of vegetable matter, thus sweetening the soil, and they help to promote nitrification. Caustic lime,—i.e., CaO , or CaO_2H_2 —always has a more decided effect than chalk or limestone, due to the calcium hydrate being more soluble, and thus being more evenly distributed through the soil; more uniformly even than the finest ground chalk or limestone. The processes of decay of organic matter in soils are really slow methods of combustion or oxidation. The organic matter in a soil gives rise to acids and when there is a considerable amount of organic matter in a wet soil—and with this we may class peaty or swampy soils—acids are formed, and the presence of an easily available base is necessary for the fixation before the oxidation work of soil bacteria can be performed. The process is complex, because the work is done by the micro-organisms in the soil, and when, by their action, an acid condition is produced, the soil is no longer congenial to their existence. Lime affords the necessary base, and leads to the more rapid decay of the organic matter, and consequent release of plant food. When lime is regularly used to oxidise organic matter in a soil, attention must be paid to renew the supply, ploughing under of farmyard manure, green manure, etc., otherwise the organic matter will become exhausted, and as the old couplet has it—"Lime and lime without manure will make both land and farmer poor." So be careful to see that a reasonable supply of organic matter is maintained. Lime is of little use as a manure without humus. Nitrification is really a process of oxidation and the presence of calcium carbonate in the soil helps to fix ammonium compounds—caused by oxidation of organic matter into nitrates and thus readily available to plants. Calcium carbonate is, however, not absolutely necessary to nitrification when other minerals such as phosphates, sulphates, potash, &c., are present in a soil. The insoluble mineral constituents of a soil are attacked to some extent by lime, and phosphoric acid enters into combination with lime, and is in this form more readily utilised by the plant than in its insoluble combinations with iron and alumina with which it is associated in the soil. On stiff clay soils, or those soils inclined to puddle when wet, the action of lime, particularly quicklime, is a flocculating effect upon the clay. Such land when limed, is drier and warmer, is more friable, and consequently more readily cultivated than unlimed land. On sandy soils the action of lime (quicklime) binds the particles of sand together, and increases the cohesive and capillary power of the soil. Its action in both classes of soils, in clay or sand, is similar to the action of lime on sand in the mixing of mortars, only on a much modified scale. Quicklime when applied to the soil absorbs moisture and becomes calcium hydrate, or hydrate of lime, which on drying absorbs carbon di-oxide from the air, forming carbonate of lime, which cements the particles of clay or sand together. The action of slaked lime is exactly the same as that of quicklime, only not so pronounced. It is generally preferable to use the lime powdered and unslakable, or only slightly and freshly slaked. The particles of clay being so very much finer than those of sand, the following apparently opposed actions are the result, the cohesiveness of clay soils is lessened, whilst that of sandy soils is increased. As ground quicklime, lime is applied at the rate of from 5 cwt. to 6 cwt. per acre, lightly scattered over the surface. It must be ground to a very fine powder to give the best results. The objections to using lime in this way are the irritating and injurious effects it has upon the skin

and eyes, and also upon the clothing. Calm days must be selected when applying lime by this method. Freshly slaked lime should be applied heavier, up to half a ton per acre on stiff clays. A convenient method of liming with freshly slaked lime is to break the quicklime up into small pieces, and place in heaps about the field and cover with moist loam. It is left exposed to the air and moisture until it begins to crumble to powder. As soon as this happens, scatter the heaps over the surface of the paddock as soon as possible, and harrow or plough in very lightly. Liming may be done at any time; but the most effective times are the autumn, winter, and early spring, but whenever it is done, the land should be left alone for two or three weeks after the application, and no seed nor any manures—especially such as contain nitrogen or superphosphate—used during that period. Carbonate of lime in its several forms, *i.e.*, chalk, ground limestone, or shells, and mild or “agricultural lime,” which is old burnt lime which has been exposed to the air and become converted into carbonate of lime by the absorption of carbon di-oxide. “Agricultural lime” is also applied to screenings from builders’ lime. Carbonate of lime is milder in its action than quicklime, and should be applied at very much heavier dressings, one ton or more per acre. For tightening sandy soils or loosening stiff clays, quicklime is preferable to carbonate of lime. Carbonate of lime to be effective, must be ground very fine, the finer the better, and should also show a high percentage of lime, as carbonate, when analysed. Lime from magnesian limestone which contains magnesia is not so good for agricultural purposes as a purer lime, because magnesia does not absorb carbon di-oxide from the soil water and gasses as quickly as lime does; consequently the magnesia retains its causticity for a longer time, and thus hinders the growth of plants. Leguminous plants, *i.e.*, lucerne, clover, peas, &c., and also maize, respond well to an application of lime before sowing, and where a crop is sown for green manure, a dressing of lime applied some time before the seed is sown helps to produce a heavier growth to plough under. Gypsum supplies plant food in the form of calcium, and indirectly by liberating potash and phosphates, and also by aiding nitrification. Gypsum is often used to fix ammonia, which is constantly being evolved from dung or decaying animal and vegetable matter. It decomposes the carbonate of ammonia, and converts it into sulphate of ammonia, in which form the ammonia does not escape into the air. If a heap of dung from which ammonia can be smelt be covered with a thin layer of gypsum, the smell will disappear, the ammonia is fixed, and its loss prevented. Gypsum is best applied moist or in wet weather, 3cwts. or 4cwts. per acre is an average dressing. For use on land which is charged with alkali, or which is irrigated by alkaline water, gypsum has a very beneficial effect. It is applied according to the degree of alkalinity. As with carbonate of lime, the finer gypsum is ground, the greater its value. Gypsum occurs in ordinary superphosphate, as the result of the chemical action of sulphuric acid upon phosphate rock. The full benefits of an application of lime may not be seen the first season, and small applications applied fairly frequently are better than large applications which are not renewed for years.

FARRELL'S FLAT.

July 11th.—Present: 14 members.

SHOULD STUBBLE BE PLOUGHED IN OR BURNT OFF?—MR. G. Bailey, in the course of a short paper dealing with this subject, said it was often stated by experimentalists that many of the fungus diseases of wheat, such as take-all and flag smut, germinated in the ground, and that being the case there was no doubt that burning the stubbles assisted in keeping the diseases under control. Again, it was claimed that the stubble when ploughed into the ground kept the soil from setting hard, but he thought the latter point would depend very considerably on the weather. If the season was dry, the stubble might be of some benefit, but if wet weather prevailed, then he thought stubble ploughed into the ground would be a menace. He gave an instance of a small paddock which he had under fallow last season. One piece of the paddock had been retained for gathering straw, and the stubble was burnt off the other portion of the paddock. When seeding was commenced, the land where the stubble had been burnt worked up with har-

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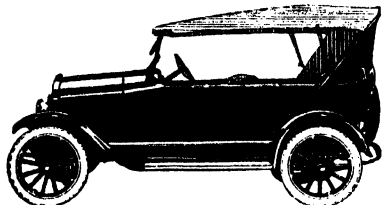
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rows well enough for seeding, but where the stubble was allowed to remain, the land had to be rolled, and even then the extra working did not make so satisfactory a seed bed as the land that had carried a fire. An interesting discussion ensued.

LIGHT'S PASS.

June 19th.—Present: 24 members and seven visitors.

PRUNING APRICOTS, PEACHES, AND PEARS.—The following paper was read by Mr. B. Boehm:—"Pruning has perhaps more to do with the success or failure of gardening than any other operation. It is also a subject on which opinions differ, and the system of pruning I advocate may not, in the eyes of some, be the correct method. *Apricots.*—If the young trees have formed a head or crown, when set out, cut three shoots back hard to about 3in. or 4in., provided the head is not more than 1ft. or 15in. from the ground. Cut the shoots to a bud on the outside of the growth, in order to force the next season's growth in an outward direction, thereby forming the tree into the shape of a vase, with an open centre. If, as sometimes happens, the head consists of only two shoots, cut these to a point where there is a bud on each side, in order to get two shoots which can be used, if suitable, for next year. If the head is more than the desired height from the ground, cut below the head, to force the head to form at the desired height. For the next three or four prunings, the leaders that are chosen to form the main framework of the tree will have to be cut back fairly hard, and also to a selected bud, to force the growth out at a proper angle and to stiffen the branches sufficiently to carry the fruit that will eventually form on the trees. All surplus wood shoots must be cut right out. By the time the fourth pruning is finished, the tree should carry from eight to 12 secondary arms. Of course, in this matter, the pruner must take into consideration the vigor of the tree. A strong-growing tree will probably carry more than the stated number of arms, and a weak-growing tree, less. Up to this period, the pruner need not worry about the fruit wood, but should concern himself mainly with the shape of the tree. From this onward, however, it will be necessary to combine the two, pruning for shape and also for fruit. Apricots bear fruit on spurs, twigs, and fruit shoots. Of these, spurs are the best, and these will normally sub-divide from year to year, and all that needs to be done is to shorten them back from time to time, to direct the sap into a shorter spur, thereby keeping it well nourished and in good heart for bearing fruit. When a spur is too old or worn out with continually bearing fruit, it should be cut right out, and very often the dormant buds at the base will force into growth and develop either fruit shoots or twigs. The fruit shoot is furnished with both wood and flower buds along its centre length, and can be either left untouched or if it is too long can be reduced to within about 6in. of its base. The fruit buds on this growth will usually bear fruit, and the wood buds will, as a rule, force into growth and develop into either spurs or short twigs. The twig is furnished with wood buds at the base and end only, all the other buds in between are flower buds, so that the twig must either be left untouched or else cut back to the base buds. If this shoot is topped back, say, half way, one of the following two things will happen:—It will fail to set fruit and die, or, if it does set fruit, it will mature thereon, but as soon as the fruit is picked it will then die, because when the twig was topped, it was topped to a flower bud, consequently the shoot was not able to make fresh growth, but while the fruit was there it was all right, because the fruit functions the same way as the green leaf, then, as soon as that is picked, there is nothing to draw the sap through the twig. The strong growth which is not required for leaders should be cut out. Some strong growths will also be found growing all over the tree. These should be attended to in summer. If, however, this has not been done, I would either cut them right out or top them back to the first good lateral, and leave this untopped. If this is done, it will, at the next pruning, be clothed in little twigs which will bear a lot of fruit next season, but then it should be cut right out. This method of dealing with strong growths on very vigorous trees is better than cutting them right out, the trouble in cutting right out is that two or three strong growths develop at the same place the following year. Of course, care must be taken to see that good fruit wood is not smothered when long growth is left. Care must also be taken not to get the arms too close together, because there is always the danger of the spurs of one arm smothering the

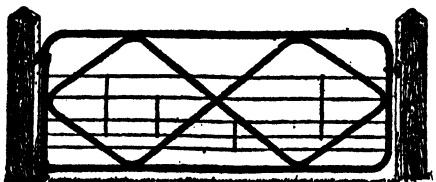
spurs of another. If, however, the trees are very vigorous a few more branches can be left, and if they grow closely they can be cut out as soon as necessary. Strong-growing trees can be left untopped for a year or two with advantage, more as a check on the tree than anything else. *Peach*.—When the head and the main framework of the peach are being formed, they can be treated in very much the same way as an apricot, but with this difference, the tree should not have quite so many branches as an apricot, because the fruit wood is not so short as that of the apricot, consequently a bigger space is necessary between the arms to ensure enough light and air for the fruit-producing growth. It will also be necessary to prune the fruit shoots and twigs that form on the tree almost from the time it is set out. The peach bears fruit mainly on fruit shoots and twigs, but these do not form readily into spurs, hence it is necessary to make provision at each pruning for next year. This can best be done by cutting a proportion of fruit shoots and twigs back to base buds. The fruit shoot of the peach, which is almost identical with that of an apricot, should be topped back to within 6in. to 12in. of the base. In this matter the pruner will have to take into consideration the quantity of fruit buds showing. If there is a big show, they can probably be cut back shorter, but if, on the other hand, there is a poor show of buds, I would not hesitate to leave it 18in. or even 2ft. if, by so doing, the necessary buds can be obtained. However, in this matter, the pruner should always remember that the closer he can get the fruit to the main arm the better, because in that position the fruit is better protected from strong winds and is also nearer to the main sap supply. Some fruit shoots will be found only a few inches long, these can safely be left untouched. The fruit twig is furnished with wood buds only at the base and at the end, all the other buds being flower buds. Therefore, it is obvious that this shoot must not be topped, if it is to be used for fruit. When a twig has been left untopped, the wood bud at the end will throw out another growth which can be left for fruit, or it should be cut back to the original base buds. Then there is the spur which arises from the fruit shoots. It is a small growth covered with fruit buds and can be left untouched, or, if the two-year-old fruit shoots on which it arises are too long, it can be shortened back to one of these spurs. As for leaving the leaders untopped, I would not practise this method on all trees year after year, but would use it as a check on strong-growing trees. At the same time, I admit that where this system is used for peach trees they seem to do remarkably well.



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Pears.—The pear tree should have a short stem with strong main arms, and be trained to form the shape of a vase. To accomplish this, it can be assumed that the tree when planted had formed a head at, say, 12in. from the ground, and the first pruning will consist of cutting back three shoots to within about 3in. or 4in. of the base. These should be placed at equal distances apart, or as near as possible to that position, making the cut just above a bud which is on the outside of the shoot. All surplus shoots must be cut right out. At the next pruning the leaders should be cut back fairly short, and also to a bud. At the second pruning the tree will have a few more leaders. The same process should be followed for the third and perhaps also for the fourth pruning. Up to this stage the pruner should endeavor to form the tree as wide as possible, and with fairly strong arms. This is rather a hard job, because pears, particularly the Duchess, variety, always seem to make a straight, upright growth. Another method can also be adopted to make the tree wider out. This is to leave some of the central shoots and train them into leaders, and when the tree has reached the desired height, cut them right out, thereby forming an open centre. A strong-growing tree at the fourth or fifth pruning should carry between 12 and 20 leaders, and generally throw out such a quantity of wood that the pruner will begin to wonder where he shall make a start. It will be evident that the trees must receive a check, and I would not prune them at all, but let them go until they steady down somewhat. If this course is followed, care must then be taken not to prune too hard. Start gradually to bring the tree back to the original plan. If the tree is hard pruned again, it will quickly get back to its strong-growing habits. The fruiting wood of the pear, like that of the apricot, if properly treated, is long lived, but it is, in my opinion, harder to form fruit wood on the pear tree. It will have been noticed during the first four or five prunings that each leader throws out a proportion of long and short shoots. The long growths should have been cut right out, and the shorter growths left untouched. Sometimes these carry one fruit bud at the end, and if this bud matures it seems to have a stunting effect on it, and some of the wood buds on the same lateral will throw out small growths which are crowned with a flower bud. These develop into spurs, and they will usually subdivide from year to year, so that in time it will be necessary again to reduce the spur close back to the main arm. When a start is made to prune the tree after it has been 'let go,' it will have too many leaders. These surplus leaders should not all be removed at the first pruning, but their removal should be extended over two or three, or even four, prunings. The same method should also be adopted with all the other laterals that have formed on the tree. These laterals will now have developed more or less spurs and fruit buds, and gradually bear fruit, thereby using up much of the surplus sap which in the early stages caused rank growths. When the tree has acquired the proper fruiting habit, all that needs to be done is to shorten back the spurs to the main arm to get them out of reach of the wind, and also to get them as close as possible to the main sap supply. The leaf twigs or fruit twigs that will still form can, if they are not too long, be left untopped, and they will speedily develop spurs, when, of course, they are treated as such. The leaders should now be topped. Probably the treatment as I have endeavored to describe would have to be modified somewhat for different classes of soil."

LYNDOCH (Average annual rainfall, 23.01in.).

June 12th—Present: 14 members.

PRUNING THE VINE.—Mr. A. Springbett, in the opening remarks of a paper dealing with this subject, first stated that for 42 years he had pruned vines in the Hillside Vineyards and he then made a brief reference to the various methods and tools that had been employed by pruners during that period. Continuing, Mr. Springbett said:—"I prefer the long-handled pruning snips for good, clean pruning, because one has the power to drive the blade in closely in cutting out water shoots and other useless wood. A chisel should be on one handle for the purpose of removing suckers cleanly. The method of planting has a considerable influence on the shape of the vine and the growth of the wood in good positions for later pruning. For trellis, plant the vines with the buds facing along the rows, never across the rows. As a vine is placed at the start, so will it have a tendency for all time to throw its wood in the direction in which the first buds face. It is a mistake to try to extend a trellised vine

too quickly, because if this is done there will be trouble in getting spurs and rods placed evenly on the arms. In this connection, I allude to such varieties as Shiraz, Carbinet, Sauvignon, and Carbinet Gross. When the arms have extended 2ft. they should be stopped, and from then on, each year, a young piece of wood should be left, say, 6in. back from the end. By doing this, an ugly, knotty end to the arms will be avoided. Shiraz, with careful pruning, can be made to last and bear heavy crops on vines 70 years old or more. It is a mistake to prune back to a uniform length of spur of two buds, because it is absolutely necessary occasionally to leave an extra bud in length. Then it is possible to secure a spur in the desired position the following pruning. It is often possible to obtain the desired wood from the old rod. The method of tying the rods to the wires not only affects the crop, but will often affect the temper of the pruner the following year. The rods should be taken along the wire from the base of the vine and not the back of the vine. The length of the rod will be determined to a great extent by the position of the wire in the fences. About eight to 10 buds to each rod is about the length. If longer rods are used, then fewer rods should be left. This, of course, does not mean that if two rods are left instead of four, that 20 buds instead of 10 should be left on the rod. This would not only be detrimental to the vine, but also to the crop. The number of bunches might be increased, but they would be smaller as also would be the berries. This naturally means extra work in gathering the grapes, and a smaller weight of grapes per vine. The number of rods to be left can be determined by the number of rods left on the vine the previous year. If the wood has weakened in growth, lessen the number of rods. If the growth has been too strong, more rods should be left. With spur pruning on the gooseberry bush style, the first year after planting, leave two spurs with two buds to each. The following year there should be four good canes to form the head of the vine. Care should be taken not to leave too many spurs, because a smaller vine can easily be crowded. Six spurs are quite enough to leave at the third pruning. I prefer forming the head of the vine at about 9in. from the ground surface, because this makes ploughing and cultivating more convenient. When the vine is pruned, and the number of spurs determined, examine the vine, and if there is any dead wood or unnecessary projection, cut it out and make a clean job."

NANTAWARRA (Average annual rainfall, 15.90in.).

June 12th—Present: seven members.

WATER CONSERVATION.—"Water conservation in the soil is a matter which should receive the careful consideration of farmers who derive their income from cereal growing," said Mr. R. F. Nicholls in a paper on this subject. Continuing, he said, "Moisture is essential for the commencement and sustenance of plant life. Many years past have been years of good rainfall and productive harvests, and while we do not look for the dry years, it might reasonably be said that a dry season is long overdue. The cost of production in that year will be as high as in other years, so we should prepare in advance by a scientific cultivation of the soil. Our system of winter fallowing for the following season allows us to conserve some of this year's moisture for the requirements of next year's cereal crop. We begin by fallowing the land to a depth of approximately 3in. This destroys weeds and lets air into the soil, the action of the sun and wind decomposes the organic matter and sets working the bacteria which are in the soil. This ploughing provides a loose surface soil which can be worked at opportune times for the remainder of the year, which then acts as a covering over the subsoil. By cultivating during the wet months, the lumps of earth are broken up, reducing the surface area exposed to the sun and producing an effect similar to that obtained by laying a blanket over the ground. Lift up a bag that has been lying out in the paddock after a rain or dew, when the surrounding ground is quite dry, the earth under it will be found to be quite damp. By cultivating the surface soil a mulch is produced which acts in the same way. There is a fineness beyond which it is inadvisable to go, but up to that point, cultivation is doing good, because the moisture forms itself as a film around the small particles of earth, and the finer these are to a degree the more moisture it will take to go round them all, just as millions of grains go into one cornsack, but if each grain had to be wrapped separately, there would not be enough sacks to go round. There is the question of protecting this moisture during the summer months, and guarding against the action of the sun's rays, which draw

moisture from the soil. By proper cultivation, it is possible to guard against this loss of moisture. After a rain in summer a crust forms over the ground, and millions of hair-like tubes are formed—capillary tubes—through which the sun draws moisture from the ground. By harrowing or other means of surface cultivation, these tubes are broken and evaporation checked. Cultivating too deeply after fallowing is not to be advocated, because it exposes the damp soil underneath to the action of the sun and wind. The idea, then, is to cultivate the surface and lock in the moisture underneath by breaking the capillary tubes—its easiest escape. The green plants which grow on fallow during the summer show how the moisture is retained by cultivation, because they need moisture, and are not found growing on uncultivated land. A good crop may be grown on any kind of land in a wet year, but it takes a dry season to demonstrate the value of moisture conserved in the soil by fallowing, and its scientific cultivation.” A good discussion followed the reading of the paper, members agreeing that light working of fallow after a rain in summer had wonderfully beneficial effects.

SADDLEWORTH (Average annual rainfall, 19.69in.).

May 16th.—Present: eight members.

FENCING.—Mr. W. J. Kirkbright, who read a paper dealing with this subject, said, to erect a good fence, corner posts should be 7ft. in length and 18in. in diameter at the top, with holes bored with a $\frac{1}{2}$ in. bit. The posts should be placed 3ft. 3in. in the ground, and when tamped only a small quantity of earth should be placed in the hole each time the post was rammed into position. It was important that the posts should be tamped tightly, otherwise they would not stand firmly. It was also necessary to provide a good stay and a flat stone about 1ft. square to hold the stay in position. Strainers should be 6ft. 9in. in length and 9in. in diameter, and placed from five chains to six chain apart. If the wires were strained in the middle of the strain, each strain could be from 10 chains to 14 chains in length. He suggested placing wooden posts about half a chain apart, with two 1in. x $\frac{1}{2}$ in. T iron posts between. The height of the fence should be 3ft. 6in., and the wires spaced as follows:—First barb on the top of the post; second barb 11in. from the top; the third wire 8in. below the barb; then the fourth, fifth, and sixth wires placed the following distances apart:—6in., 5 $\frac{1}{2}$ in., 5 $\frac{1}{2}$ in.,—leaving 6in. between the bottom wire and the surface of the ground.

FARM ROUTINE.—At a further meeting held on June 13th, Mr. L. Frost read a paper dealing with this subject. He outlined farm operations for the year, commencing with seeding operations. If a drill cultivator were used, he said, all fallow should have been worked previously, but if the cultivator and drill were employed, a previous cultivation would not be necessary unless the fallow was very dirty. After drilling, all land should be harrowed. If the farmer kept sheep it would be necessary, during seeding, to tail all lambs. Seeding completed, fallowing should be proceeded with as soon as possible. During wet weather the stables should be cleaned out, hay cut for chaff, bags repaired, and if there was a forge on the farm numerous odd jobs such as sharpening tynes, making S hooks, &c., could be carried out. After fallowing, the land should be harrowed, and during August and September advantage should be taken of the fine weather to roll the crop. In September and October all the fallow should be cultivated, and the sheep shorn. At the end of November the crop would be ready for hay cutting, which would be followed by stooking and stacking. Reaping and carting the wheat to the station would complete the grain harvest. Then straw should be cut to thatch the stacks, old stacks should be patched or re-thatched, and straw stacks erected for shelter for stock. Fences would require attention. All broken wires should be repaired, and all slack ones strained. Numerous other jobs, such as crutching sheep, overhauling machinery, destroying noxious weeds and stinkwort on the fallow should also be attended to. The sheep would require a weekly inspection because of the blowfly pest. Seed should be graded and pickled, and fertilisers carted into the barn, farm buildings repaired, and a little work done to the farm garden.

Eleven members attended a meeting of the Branch which was held on July 18th, when a paper dealing with the subject “Care and Working of Tractors” was contributed by Mr. G. Winkler. The Honorary Secretary (Mr. F. Coleman) presented the annual report, and the officers were elected for the ensuing year.

LONE PINE, June 20th.—The monthly meeting of the Branch was held at Mr. R. Hentschke's residence, and an instructive address, "Pruning the Vine," was delivered by Mr. C. A. Pollitt.

NANTAWARRA, July 10th.—The meeting discussed the subject, "Rabbit Destruction." Mr. R. F. Nicholls said that he used carbon bi-sulphide, and had not had any great difficulty in keeping the pest under control. Mr. G. M. Herbert said it was a good plan after using carbon bi-sulphide to ram an old bag into the hole, and then fill it with earth. Messrs. A. F. Herbert and C. A. Pridham mentioned the success they had had by spreading a bag over the hole and then covering up the burrow with earth. The rabbits would seldom dig around the bag and regain admission.

OWEN, July 9th.—Mr. F. C. Richards, of the Department of Agriculture, attended the annual meeting of the Owen Branch and delivered an address, "The Work of the Agricultural Bureau," to a large gathering of members and visitors.

STOCKPORT, July 19th.—Mr. A. M. Fuller, Tarlee (General Secretary for the Midlands District Wheat Crop Competitions, attended the meeting and addressed members on the subject, "The Advantages of Crop Competitions."

TARLEE, June 17th.—Matters of local interest were discussed at the June meeting, which was attended by 16 members and four visitors.

WILLIAMSTOWN, July 11th.—Mr. D. Norseworthy gave an apple-packing demonstration. The Honorary Secretary (Mr. G. Brown) presented the annual report, and the officers were elected for the ensuing year.

YORKE PENINSULA DISTRICT.

(TO BUTE.)

KILKERRAN.

June 17th.—Present: 10 members.

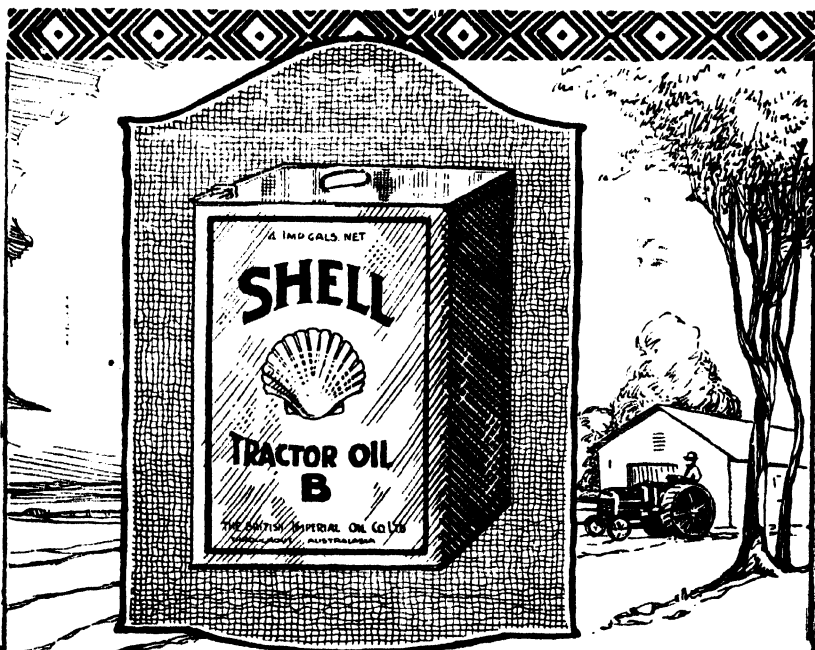
FALLOWING.—The Honorary Secretary (Mr. A. F. F. Sawade) contributed the following paper on this subject:—"Fallowing is carried out," he said, "to make the seed bed as near to the ideal as possible, therefore, let us always keep that in our minds when fallowing. Of course, the subsequent working back has as much to do in this respect as the fallowing, but I will confine my remarks to the first operation. Fallowing is laying the foundation for subsequent working, and, therefore, one must act accordingly. In the grey soils in our district, I advise shallow ploughing, say, 2in., because the subsoil in this case is mostly rubble, and this should not be disturbed on any account in sandy or red soil. It is advisable to go a little deeper, say, 3in. or 4in., preferably the latter in red soil. Early fallow is without doubt the best. One should finish up before the end of August. Of course, weather conditions must be considered. Do not plough up the ground in too dry a state; also avoid ploughing it up very wet, especially in grey soil. Sand may be ploughed to advantage when very wet. Plough the soil only when in a friable state, and when it crumbles well. The best worked-up fallow is often neglected later on." During the discussion which followed, Mr. E. Heinrich asked whether the writer of the paper had ever had experience with spring-tyne fallowing, because he was of the opinion that it was not advisable to follow that method, because he thought the soil should be turned over. Mr. E. H. Dutschke remarked that though he was practically a new farmer in the district, he had gone in for experimenting with the spring-tyne cultivator for fallowing stubble land, and he found that he grew the best crops on the ground so treated. He certainly was in favor of that method. Mr. B. I. Koch was also in favor of the spring-tyne fallowing, because the ground did not become so lumpy as when ploughed up. Members generally were of the opinion that it was not necessary to plough too deeply, 2in. being ample depth in most soils in that district.

WEAVERS.

June 16th.—Present: 13 members.

RURAL PRODUCTION.—Mr. F. A. Anderson contributed a paper on this subject:—Many people contended, he said, that it was not possible for Australia to carry a very large population because of the absence of sufficient coal and oil, and also because of the scarcity of water over a large area. At the present time, that was only too true, but every producer should insist on the Government doing its utmost to overcome those difficulties, which, he believed, in time, would be done. For instance, when farmers took up land in that district, it was said they would never be able to hold it on account of the shortage of water. He could remember the time when in the whole of the districts of Dalrymple and Ramsay there were only seven wells, and it was thought they were the only places where water could be found. To-day there were dozens of wells in that district. If as much was done during the next 50 years to develop Australia as our forefathers did during the past 50 years, our country should carry millions more people. He thought where the greatest number of people would be able to find employment would be in the various sidelines on the farm. There were many sidelines that could be made to pay if more men were available, more markets found, and better system of marketing the produce established. Sheep, cows, pigs, and fowls, and also a small garden were all sidelines which would pay much better if more time and attention were given them and suitable crops grown for feed. With regard to poultry, it has been proved at laying competitions that if proper attention were given them, they would pay to the extent that a man could make a living from them. No better place could be found to erect a poultry yard than on a farm where every ounce of feed could be grown. On most farms they received very little attention, they got most of their living by clearing up the waste in the stable, hay, and pig yards. He doubted if there was much profit in cows unless there were several womenfolk to do the work, but he thought if enough cows were kept in conjunction with pigs to keep one man employed, there would be a profit. That would make employment for another man growing fodder for fowls, cows, and pigs, and vegetables for the house. Sheep paid well at the present time, but he thought if a proper system of handfeeding were practised in the short months of the year, they would be made to pay much better. If a farmer had enough paddock feed to keep wethers fat in the winter, he had a lot of feed going to waste in the good months; it would pay much better, he said, to stack hay, and handfeed when feed was scarce. He believed twice as many sheep could be kept on small farms by that means. He was not advocating that every farmer should straight away double his flock, erect mangers and shelters in every paddock, that would have to come gradually as the population increased and the land became dearer. "If we get increased population, will our farms be cut into smaller areas? was a question that might well be asked and discussed?" he said. He was inclined to think that if employer and employed could agree, most farms would be better if left the size they were at present, and more labor employed to work them. By doing that, a great saving could be made in the working plant. However small the farm, the farmer must have sufficient implements to work it properly, whereas many of the implements would do all the work required of them on farms many times larger. Continuing, he said, "Join the Agricultural Bureau, and take a keen interest in its business. The Agricultural Bureau is practically the only organisation the producers have through which they can further their interests. The Bureau is not a political body, and I think it should remain so. If every farmer became a member and took an interest in the Bureau, it would soon be a power in the land and a very great help to the Government." A good discussion followed the reading of the paper.

MOONTA, June 21st.—The Honorary Secretary (Mr. J. Lawry) read a paper, "Wheats to Grow," and an interesting discussion followed, in which it was resolved to discontinue growing red wheats.



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WESTERN DISTRICT.

BUTLER (Average annual rainfall, 16.61in.).

June 16th.—Present: 12 members and two visitors.

FARM BLACKSMITHING.—In a paper, "Farm Blacksmithing," Mr. V. Stewart said the farmer who could do most of the farm blacksmithing was able to save a considerable amount of time and do the work at a very small cost. Charcoal was the most economical form of fuel for the purpose. When it was necessary to weld two pieces of iron, the operator should heat the metal to melting stage and then place a small quantity of clean, washed sand on the fire, allowing the iron to remain in the fire until it appeared to be boiling; it was then ready for welding. Stock dies were very useful tools, and one should be very careful in using them. Any attempt to thread a hot piece of iron, would ruin the die. Place plenty of good lard on the piece of iron that was to be screw threaded and keep the dies thoroughly cleaned out whilst at work, otherwise they became choked with metal shavings, which spoiled the threads. The dies should always be cleaned before they were put away in the box. The drill bits also required attention, and they should be well sharpened before being used. When sharpening the bits, both sides of the cutting end should be given a round instead of a flat point.

MILTALIE (Average annual rainfall, 14in. to 15in.).

June 14th.—Present: six members and three visitors.

SHEEP MANAGEMENT.—The Honorary Secretary (Mr. W. G. Smith) read a paper entitled "Sheep Management," in which he dealt with the apparently more neglected points in sheep management. "The branding of sheep," he said, "in many cases, does not receive the care and attention that it warrants. It is not a large amount of branding oil or wide brand plate that gives a clear, legible brand at shearing time. I use a three-bar brand made from a slightly flattened piece of No. 6 wire, and with this, over 1,100 sheep can be branded with 1gal. of branding oil, and further, the brand shows up well at shearing time. The great secret in branding sheep is first to obtain a good branding oil, and then, when branding, keep the oil thoroughly stirred. By no means have the plate of the brand wider than necessary, 3/16in. or 1/4in. One is tempted to criticise the manner in which some growers brand the wool. The wool buyer can only form one opinion of the contents when glancing at a bale of wool branded in a careless manner. Neatly and properly branded bales that are clean in appearance add considerably to the attractiveness of wool, and show that the grower is careful in the 'get up' of his clip. In branding wool, I always use ink and stencil plates. Brand the top and front of the bale, using the initials of the grower, or a sheep brand over the top of the name of the farm, then follow by describing the wool, such as, AA, A, ewes, or wethers, &c., as the case may be, numbering each bale from one onwards. As to the question of which is the more profitable to the flock owner, to complete shearing a month or so before the grass seeds commence to fall or delay shearing in order to miss the seeds, in my opinion, the extra wool grown in the spring and carried over the 12 months on the sheep's back, has returned very poor interest to the owner. There are several other points of advantage in later shearing. One is that the feed is harder, and, therefore, sheep do not receive such a check in going through the shed, the gratings and shearing boards do not become so dirty, the days are longer, and so giving more time for shearing operations; there will also be more yolk in the wool. This latter point is an advantage to the clip, and sheep naturally shear better, especially lambs, because the staple will be longer. The foregoing points in favor of late shearing more than counter-balance the advantages of early shearing. There are possibly two or three advantages in early shearing, and these only apply in certain cases, such as scarcity of shearers, or completion of shearing before harvest time, or in order to put condition on before the feed dries off. In recent years there has come upon the flock owner another pest—the blowfly—and the most effective methods should be employed to cope with the trouble in order to save loss to sheep owners and worry in watching, yarding, and treating affected sheep. There are three methods practised as a protection against the blowfly:—Jetting or swabbing with dip or other arsenical solutions, and crutching. Crutching does not offer much protection in a bad fly attack, and is expensive, because the staple must be chopped

through and at the same time it is severe on ewes carrying lambs. The same thing might be said of swabbing, although from experience it appears to be just as effective as jetting, providing care is taken to wet the wool thoroughly to the skin over the top of the tail. Swabbing should be practised as a substitute for jetting when a suitable jetting plant is not available, but should a plant be available jetting is to be preferred. Jetting 924 ewes, six months after shearing, cost 4d. per head. The Blowfly Committee of the Commonwealth Bureau of Science and Industry, who have carried out very extensive experiments and have had under observation the jetting of many thousands of sheep, find that jetting with an arsenical solution gives the best protection and is the cheapest method yet discovered, and that jetting with grey arsenic costs one-fifth of a penny per sheep. The year's summary or dates, events, &c., in connection with the sheep management may be outlined as follows:—Commencing after shearing—wean lambs before feed dries off, and place aged and culled ewes in the best paddock to fatten for market; mate ewes on November 1, and remove the rams on February 1; prepare for lambing by thoroughly baiting for foxes from the March 15th to April 7th, then draft off or jet or swab the heaviest ewes for pasturing in the reserved lambing paddock. Then jet or swab all other ewes including ewe hoggets and lambs on first signs of fly attack, also 'wig' all woolly-blind sheep. About the end of May mark all lambs over one week old, and about six weeks later the balance of the drop should be ready to mark. About September, clear the lambing paddocks, and reserve pastures for the following lambing time. Plan for shearing to be completed in time to avoid grass seeds." In the discussion which followed, Mr. J. C. Story did not favor early shearing because the yolk in the wool was necessary to develop the fleece. In late shearing the grower reaped the benefit of the later development of the wool. It was the duty of every grower to raise the best class of sheep possible, and he agreed with the writer on the question of keeping bales clean and branding neatly to make the clip more attractive. The chairman (Mr. F. Jacobs) agreed that jetting was a very desirable operation. His experience led him to believe that there were some advantages in early shearing. He thought that thorough baiting for foxes should be commenced before lambing time..

MOUNT HOPE.

May 14th.—Present: six members.

HANDFEEDING SHEEP.—Mr. J. H. Vigar read the following paper bearing the title, "Does it pay to grow oats on heath land to handfeed sheep?"—"In order to illustrate my contentions, I propose suggesting that a farmer has grazing land that will carry 500 sheep for six months of the year, and to provide feed for them for the other half of the year it will be necessary to crop 200 acres every year for five to 10 years, and over that period he cannot expect more than a 15bush. average. Therefore, that average of five bags per acre would be a return of 1,000 bags of oats. Handfeeding a mixed flock of sheep from the 1st of March until the end of August with a daily ration of 1½lbs. of oats per sheep would mean that each sheep would consume 250lbs. of oats for the six months, so that the 500 sheep would consume 1,000 bags of oats for six months. To farm the land to secure the average mentioned, it would have to be cultivated thoroughly, therefore the extra work entailed would mean the employment of a man for the full 12 months of the year—wages £2 per week and keep £1 would amount to £150. The necessary plant would be:—Tractor £180, five-furrow plough £50, 15-tine cultivator £50, set of four-leaf harrows £20, harvester £180. The total cost of the plant would be £560. Allowing 6 per cent. interest on outlay of plant, and 10 per cent. depreciation, would amount to £88. Using 45 per cent. super at the rate of 1cwt. to the acre would mean 10 tons, the cost of which on the farm would be £6 per ton, equals £60. For seed, oats at the rate of 1bush. to the acre at 2s. 6d. per bush. would cost £25, and sundries such as petrol, oil, &c., £20. The total expenditure would amount to £343. Originally, this man could have only carried 250 sheep for the 12 months on the original grazing land, and although I have only allowed for the feeding of 500 sheep for six months, the heath land if farmed as I have suggested, and in addition to the extra land that will "lie out" every third and fourth year, and with the self-sown stubble, the farmer will be able to carry 750 sheep, instead of 250, therefore, the return from 500 sheep can be taken into account. Wool £400; sale of 200 sheep off shears—100 east ewes at 12s., and 100 wethers

at 16s.—£140; extra return £540. The expenditure being £343, the transaction shows a clear profit of £197. You will notice no provision has been made for procuring land, and where 800 acres has been farmed and is fairly clean of shoots, etc., the cost of land would be £1,000. Interest on outlay at 6 per cent., £60; rent to Crown, rates, taxes, &c., £20; total, £80. Taking that from the original profit of £197 leaves a profit of £117. To carry out the suggested operations the settler would have to find £1,715 to start with, and carry on the first year. That is the actual position, and with a profit of £117 the subject is a very open question as to whether it would prove a profitable undertaking.

ROBERTS AND VERRAN.

June 12th.—Present: 12 members.

SHEEP ON THE FARM.—The following paper was read by Mr. W. H. Whittaker:—"I favor the Merino as the best all-round sheep for this district. Merino wool is bringing a good price, and is likely to do so for a long time to come. The lambs bring as good a price when fat as any other breed of sheep, and, whilst they may take a little longer to mature, the better results from the Merino pelt will make up for the extra time the lamb takes to mature. Merinos will always bring a fair price. Crossbreds, unless in good, fat condition, cannot be easily disposed of, they are bad fenceers, and do not return such good prices for wool as the pure-bred merino. When starting with a new flock, select a large-framed and square-bodied ewe, with not too much wool about the face, nor too many wrinkles over the body. The fleece should be of a good length and thickness. From about three to six years old is the best age for an ewe to have strong lambs. When sheep of that class are bred, the lambs can be sold to freezers and the sheep will sell well in any market." In the discussion that followed, Mr. H. Simmons considered sheep a very profitable sideline. He favored the large-framed and clean-faced Merino, because sheep with woolly faces were subject to wool-blindness. Mr. D. Jonas favored pure-bred sheep of whatever breed was kept. He thought the Merino was the best breed for their district. Mr. A. T. Cowley said the Merino was the best sheep for the farmer. When handy to freezers, the crossbreds were more easily disposed of as lambs than Merinos, but for that district the Merino was the best proposition. Indiscriminate crossbreeding should be avoided. He compared the original Merino with the sheep of the present day. He also stated that unless some means of combating the blowfly pest were found, a new breed of sheep would need to be introduced. Mr. Brian Evans favored the Merino, but when the freezers were established at Port Lincoln he thought crossbreds would be worth considering. He favored the Dorset Horn-Merino cross. Mr. M. Masters favored Merinos for wool, but when the freezers were established, he favored crossbreds for breeding lambs for export. He favored the Leicester-Merino cross, and advised growing feed for fattening the lambs quickly.

RUDALL.

July 10th.—Present: 12 members.

CARE OF HARNESS.—Mr. A. Crabb read the following paper:—"New harness before being used, should be well greased to prevent it cracking. A good harness dressing can be made as follows:—1 gallon of neatfoot oil to 6 lbs. of suet. The harness should be dressed before fallowing and again before harvesting. In the event of any stitches being broken in any part of the harness, it is better to have it repaired properly with thread, rather than to use copper rivets or a piece of wire for a temporary repair. Collars should receive special attention, for they are the main part of the harness for working horses. A collar should never be cut to prevent rubbing a horse. It is better to shift the draught of the hames to miss the sore on the shoulder. If the chains rub the sides of the horses, it is a good plan to insert a piece of wood under the hame hook or widen the spreader. Steel chains require just as much care as leather traces. Both should be put into the shed when not in use. Greasing steel chains prevents them from rusting. It is to be regretted that so many farmers allow the chains to be knocked about, because with harness at its present price it pays to devote time and attention to its welfare." In the discussion that followed, Mr. J. Crabb stated the thorough grooming and care in choosing collars would do much to check sore shoulders. In the event of a shoulder being rubbed, it was desirable to take the pressure off the sore at once. That could be

done by inserting a pad between the collar and the shoulder just above the sore. Mr. Smallacombe said that people were often cruel to horses through careless treatment of the harness. It was important to keep the collar clean and thus guard against sores. Care of harness was an important factor in farm work. Mr. P. Crabb was in favour of washing the collar before it was greased. Thorough grooming was an important factor in keeping the shoulders sound whilst the collars should be wiped clean each morning before harnessing. All sores should be kept scrupulously clean. A breast-plate could be used if a horse had rubbed its shoulders badly. Mr. Jericho said he had had forced upon him the necessity for only giving horses light work after they had been "spelled." Horses should have the work made a trifle lighter rather than too heavy. Overloading was the cause of many sore shoulders. In a case of sore shoulders, he found the use of a wooden collar for a short time most beneficial. There was a good deal of rough treatment meted out to harness on most farms. It was knocked to pieces rather than worn out.

MCLACHLAN.

July 5th.—Present: 16 members and four visitors.

SHEEP ON THE FARM.—In a paper on this subject, Mr. W. L. Hawke said with the high prices of wool prevailing and the building of a freezing works at Port Lincoln, many farmers in that district were beginning to realise the value of sheep on the farm. As that district became older, and the weeds spread, a flock of sheep would be essential to keep them down, especially on fallow ground. He thought the Merino was generally recognised as the most profitable breed of sheep to keep, not only on account of the greater weight of fleece and the higher price realised for it, but because that sheep would live and thrive where less hardy animals such as the English Longwools would find it difficult to ek out a bare existence. Now that a freezing works was being built in Port Lincoln the producing of fat lambs for export should receive their consideration. In that respect the Merino was outclassed by many other types of sheep. For large-framed, early-maturing lambs, the English breeds were among the best. Their wool, however, was not of the high quality of a Merino, therefore it would not pay to keep Longwool ewes for the purpose of marketing their lambs as freezers. A common practice in Australia at the present time was to mate Longwool rams with Merino ewes. The progeny inherited to a large extent the early maturing qualities of its sire while its skin was worth more than that of the purebred Longwool. The best breed of English sheep to mate with the Merino was largely a matter of conditions and personal choice. The Dorset Horn was a favorite amongst South Australian producers, as also were other Down breeds. Those sheep had well-proportioned, square, meaty bodies. The value of the Downs rested in their early maturing propensities, weight, and quality of their meat, but not so much in their wool. Should the farmer go a step further, and mate a Longwool to a Crossbred, he undoubtedly increased the size of the lamb, but both the wool and the meat suffered as a result. In any case, that should be the extreme limit to crossbreeding, because mongrels cost more to fatten, their meat was of inferior quality, and the skin of considerably less value. Breeding lambs for market had the advantage over permanent flocks because one could carry an extra number of sheep when feed was plentiful. By sowing barley and oats on the stubbles for early greenfeed, a farm with a grazing capacity of 1,000 dry sheep should be capable of raising 500 lambs as well, because the feed was growing whilst they were, and they were marketed and off the farm before the flush of the feed was gone. An additional advantage obtained by sowing oats for feeding off was that the oats did not suffer from take-all to any extent, whilst ordinary seeding operations were not interfered with, and they could be sown dry quite safely during February and March.

WIRRULLA.

May 17th.—Present: 20 members and five visitors.

NECESSARY STOCK ON THE FARM.—Mr. F. J. Dunn read the following paper:—"On the average farm, horses are the most important form of live stock. The number required depends entirely on the area under cultivation. If a farmer has, say, about 300 acres to cultivate, only one team of eight horses will be required. These should be of a medium draught stamp, and if the farmer is not in a position to own a car, two trap or general utility horses will be needed. Should there be a car on the farm only one light horse will be required for

saddle work and single harness. Anyone cultivating more than the area before-mentioned will require two teams. These should be of two different types of horses, because where two teams are employed one team is idle a good part of the time. The horses of No. 1 team, which will be used for swing work, should be a little lighter than medium draught. This team will be kept busy most of the time, because the animals travel considerably faster and keep in better condition than the majority of heavier horses. No. 2 team will be worked in the wagon. Next in importance are sheep, and those farmers inside a vermin fence should keep as many sheep as possible, giving consideration, of course, to water and feed supplies. The best breed is the Merino, because the wool and skins are worth more than those of other breeds and they are less trouble to keep inside the fences. The number of cows that should be kept depends on the number of persons in the house. Where there is a family of six or more, three cows will be needed, two 'in' and one out of milk. Forty or 50 fowls and a couple of pigs can also be turned to profitable account on the farm." An interesting discussion followed.

WIRRULLA.

June 14th.—Present: 14 members and five visitors.

SCRUB BURNING.—Mr. A. A. Schar in the course of a paper dealing with this subject said his remarks would apply to districts where the scrub was patchy, with large trees scattered throughout the block. One method of clearing scrub land for cultivation was to burn the standing scrub and after two or three years to cut the shoots and packing them around the butts of trees. It was necessary to attend the fires after the tree had fallen, and keep the timber packed up around the tree, so that the majority of the stumps would burn out. That was a slow and tedious job; but the ultimate results would amply repay anyone who wanted to deal with small clumps of trees, and did not require the land for cultivation for two or three years. The other method, that of cutting the scrub, was by far the best way of dealing with larger areas of land. The work was very laborious, but there was no revenue to be derived from standing scrub; one had to clear it before growing cereals, and eventually for stock grazing. In cutting the scrub, he advised an inspection of the block and cutting out all the good posts and strainers, and any other timber, &c., that would be required for yards, gates, rails, swings, &c. When the actual clearing was started, the speaker advised cutting the trees as low as possible, but that was very difficult at times owing to the decayed leaves, &c., that were heaped around the butt of the tree. Large trees were best dealt with in the following manner:—Scrape up all loose leaves and sticks with a pitchfork, and a good fire can be made with dead timber. A little attention is necessary to keep the fire burning, and in most instances the tree will burn down; if not, the heat of the fire will be sufficient to kill it." He made a practice of leaving a belt of scrub as near the centre of the paddock as possible for shelter for stock. To prepare a fire break, all timber should be thrown in for about half a chain, care being taken that all leaves, &c., were raked up cleanly, and then when the break was ploughed, there would be no fear of the fire creeping over. He favored a south wind for burning the scrub, because, as a rule, winds from that direction were more consistent, and there was practically no fear of whirlwinds, which were common when burning with a north wind. When clearing after the burn, the main object should be to build fires on the stumps, and if that was done in good dry weather, a good number of stumps would burn out.

YADNARIE (Average annual rainfall, 14.09in.).

July 15.—Present: 23 members.

THE VALUE OF OAT CULTIVATION.—Mr. P. G. Dolling in the course of a paper dealing with this subject, said farmers in that district had to confine their attention chiefly to the cultivation of wheat and oats, and the question as to whether it paid to rely on wheat alone was being considered by many. More attention should be paid to oats, whereby the wheat yields could be increased. One often heard that take-all reduced the yield of crops. The general practice was to sow oats on land that was affected with take-all, either by simply drilling in the seed without cultivation or lightly cultivating the stubble, before a rain. If the stubble was burnt off, the land could be lightly fallowed and the following season sown with good clean oats. After the crop was reaped or cut for hay the stubble should be burnt and the land fallowed again the following winter. If that were done, two crops of

wheat could be grown in succession without fear of take-all. That system of cropping would ensure a better yield of oats, a better sample, and a better price. He advised sowing the earlier varieties of oats, such as Lachlan and Early Burt. In the discussion that followed, Mr. J. J. Deer thought a good rotation would be—(1) fallow; (2) wheat; (3) oats on stubble. The following year a good green-feed paddock would be obtained and the self-sown crop would be quite clean. Oaten stubble should be left out in preference to wheaten stubble, because wheaten stubble harbored takeall. Mr. O. Forbes thought that clean fallow was just as good a check for take-all as a crop of oats and considered it advisable to crop the land two years in succession with wheat, burn the stubble, fallow the land, and then sow wheat instead of oats. Mr. G. B. Kobelt's experience had taught him that oats were invaluable in preventing and checking take-all. No one should risk two crops of wheat in succession, unless a crop of oats immediately followed. Mr. R. B. Deer did not consider oats an effective check for take-all if drilled in on stubble ground, and he favored ploughing. Messrs. A. Spriggs and W. O. Hoffman were of the opinion that burning the stubbles, and especially oaten stubble, was most valuable in eradicating take-all, and that one crop of wheat and then one crop of oats was the best practice. They would never sow two crops of wheat in succession.

CARROW, June 11th.—Mr. J. H. Harrowfield read a paper, "Fallowing," and in the discussion that followed it was unanimously agreed that the depth of ploughing should not exceed 3in. in the Carrow district.

MOUNT HOPE, July 12th.—Mr. W. Mahoney read a short paper, "Destruction of Rabbits," and an interesting discussion followed.

PETINA, June 28th.—Messrs Howard and Jones read extracts from the Departmental Bulletin, "Tillage of the Soil," and an instructive discussion followed.

POOCHERA, June 28th.—Mr. P. A. Darenburg contributed a short paper, "Shed Building," and an interesting discussion followed. Several other subjects of local interest were also brought forward for discussion.

EASTERN DISTRICT.

CLAYPAN BORE (Average annual rainfall, 16in. to 17in.).

June 16th.—Present: five members.

PREPARATION OF FALLOW.—Mr. J. Hienicke read the following paper:—"No definite system for the preparation of fallow that will suit all classes of soil and climatic conditions can be suggested, but the following system gives satisfactory returns in this district, where the main object of the farmer is to grow wheat. If stubble land is to be fallowed, the straw should, if possible, be burned towards the end of the summer, but if the summer has been wet and the straw contains green summer growth, burning should be delayed until the commencement of frosty weather. Commence fallowing as soon as seeding is completed, providing the land is not too wet nor too hard to enable one to make a good job of the work. Do not plough deeply unless weeds have made a good growth. From 2in. to 2½in. is deep enough for early fallowing. Shallow fallow provides the best opportunity for the germination of weed seeds. As the season advances and weeds make a good start, plough slightly deeper, but not more than 3in. Deep fallow is not necessary for growing good crops in this district. The first land fallowed should be harrowed twice across the ploughing about the end of July. Fallowing should be finished by the end of August, and harrowing completed by the middle of September. After the paddock has been harrowed, sheep should be pastured occasionally when the surface soil is dry, to eat off any weeds, &c. All fallow should be cultivated before harvest, the later the better. Late cultivation destroys many summer weeds. If possible, cut thistles and cart off stumps before harvest. Keep the fallow clean with sheep during summer and early autumn. If sheep are not available, the cultivator should be worked, but I do not favor summer cultivating when weeds can be destroyed by any other process, because too much cultivation very often assists the development of take-all."

KRINGIN.

May 17th.—Present: Seven members.

RABBIT DESTRUCTION.—The Honorary Secretary (Mr. F. C. Tee) read the following paper:—"In this district I have noticed that rabbits are not yet very numerous, and, therefore, it is advisable that farmers should make every effort to keep the pest under control. So soon as seeding operations are completed, the farmer should fumigate all burrows, using either a fumigator or bi-sulphate of carbon. If this method is too expensive, sulphur and kerosene, which is quite as effective, can be used. Tear up strips of super bags, wet them with kerosene, rub sulphur on them, set them alight, push the bagging down the holes, and block each hole as the smoke comes out until no more smoke appears in any of the holes, and then fill in all holes. Set a few traps on top of the filled-in holes to catch any stray rabbits. Porcupine bushes instead of kerosene can also be used effectively. If the smoking-out or fumigating is continued until hay cutting is commenced, there will not be very much of the crop damaged by rabbits. So soon as harvesting operations are over, poisoned pollard baits can be distributed, say twice in March, or more frequently if time permits, if rabbits are plentiful. In addition to the above suggestions, the burrows should be ploughed in from time to time. Farm horses will not, as a rule, cross burrows, and to overcome this a chain should be attached to the plough to which the team can be hitched and the plough worked around the warrens. In turning, the plough will cross the warrens, and the horses will then go over the ploughing. This, of course, applies to warrens in cleared land." In the discussion that followed, Mr. Werner, a visitor, said that the best time to deal with rabbits was after harvest when there was no green feed about. Mr. H. Menz said he found that when trapping, more rabbits could be caught by filling in most of the holes and setting traps on top of the holes that had been filled in. Mr. P. Guthleben said he had had good results from smoking out the burrows. A fire was made in the hole, and when the wood had burnt to coals the coals were pushed down the hole and green porcupine bushes placed on the coals, and as the smoke issued from the burrows, the holes were filled in. Mr. F. W. Morrow had found it a good plan to plough over the burrows when seeding, and then to set traps on top of the holes if they were opened again. Poisoned pollard on sandalwood sticks had also proved effective.

KRINGIN.

June 14th.—Present: 14 members.

PREPARING LAND FOR THE HAY CROP.—In the course of a paper dealing with this subject, Mr. H. A. Menz said too much care could not be taken in clearing and preparing the land for hay. On new land, all snags, &c., should be cut as low as possible, soon after a fire had been over it. The paddock should then be skim ploughed to a depth of from 2in. to 2½in. If it had been ploughed wet, it should be harrowed before the drill to pulverise the soil and conserve moisture. Seed should be drilled at the rate of 60lbs. with 60lbs. super to the acre. A mixture of two parts wheat to one of oats would give a heavy yield. For hay, he considered Algerian oats to be the best variety. After the land had been drilled, the harrows should again be used, but should the crop be sown dry, they should not be used until after a good rain. When seeding was finished, all stumps, sticks, &c., should be removed, and when the crop had made a good start the land should be rolled to make a level surface for the binder. On stubble land, a good stubble burn was essential, but if a running burn was doubtful, the straw should be fireraked. If that could not be done satisfactorily, all shoots should be cut and then raked with the scrub or hay rake, and the rubbish burnt in rows. On wheaten stubble, he suggested sowing oats with 80lbs. super. Cleaning up the land was also an important factor, and the sooner that work was done the better, because if left too late, stumps, &c., were difficult to find in a heavy crop. Before cutting was started, the binder should be cleaned and overhauled. In the discussion that followed, Mr. J. C. Wernes said he favored harrowing the crop when it was about 6in. high, preferably after a rain. Mr. Palmer asked which was the best variety of wheat to sow with the oats. Early Burt was recommended by the writer of the paper. Mr. F. C. Tee did not favor sowing oats and wheat mixed for hay, because if the crop failed it would then be practically useless as a crop, either for wheat or oats. He favored mixed hay, but thought that could be done by stacking the two together load for load when building the

"Fowls Laying Regularly Now" Says still another Karswood user.



The many testimonials we publish in these columns should be sufficient to show even the most sceptical poultry keeper that Karswood Poultry Spice offers an end to small egg returns. It supplies the

birds with innocuous tonic ingredients that enrich the blood, tone up the system, and put them in the state of vigorous health which makes egg production an easy matter.

Here are one or two more letters from "Backyarders" who keep the ordinary type of birds. Their results are typical. You, too, can make extra profits from your birds. Read these letters and resolve to start the test of Karswood to-morrow.

"Shere," Lindfield, July 3rd, 1923.

Dear Sirs—I am more than ever convinced of the value of your "Karswood" Poultry Spice for laying fowls. Since writing you some time ago I had continued using your Spice until, a few weeks ago, when supplies ran out. Thinking that perhaps the fowls would continue laying without it I did not replace my stock, but soon noticed a falling off in the egg supply. I then commenced using "Karswood" again and am pleased to tell you my fowls are now laying as regularly as before.

In future it will be "Karswood" all the time.

(Signed) MRS. J. ANDREWS.

Corrie Road, P.O., North Manly,

July 20th, 1923.

Dear Sirs—Your advertisement in the *Evening Sun* this week came to my notice. I have a small poultry farm, and am a very enthusiastic user of Karswood. My first trial of it was on a yard of second season hens. The result was they gave twice as many eggs in that season as they gave in their first season.

I find it brings the young table birds on very rapidly. At three months old on Karswood they are equal in size to five months old birds without Karswood.

(Signed) MISS M. SHORT.

Molonglo Settlement,

Queanbeyan, N.S.W.

August 26th, 1923.

Dear Sirs—I am a firm believer in

Karswood Poultry Spice, as I used it for years in England, and while there I made £2 profit per month from 27 hens, and that was through using Karswood Poultry Spice.

(Signed) T. J. BARBER.

"Warreen," 15, Gordon Street,
Brighton Beach,

Vic., August 27th, 1923.

Dear Sirs—Adverting to your letter of the 21st instant, relating to Karswood, kindly note that I have no objection to your using the facts I have placed before you for advertising your Spice.

I mentioned that my first hen commenced laying on the 20th May, 1923, and the sixth in July (this bird made too much flesh), so I therefore claim seven days to average up the time between the 1st and 6th, when some had not commenced laying.

Therefore, counting the three months up to to-day (August 27th), my total of eggs produced stands at 352 (three hundred and fifty-two). Rough average 3½ per day for 92 days.

The number of eggs received this month stands at 122 for 27 days—average 4½ per day.

I am agreeable that you substitute these figures for those in my previous letter, should you deem it advisable. You will be notified from time to time of figures, &c.

(Signed) C. R. NEVILLE.

MAKE THIS TEST—

Go to your local grocer, storekeeper, or produce dealer. Get a 1s. packet of Karswood Poultry Spice. Test it for a fortnight or three weeks on half a dozen hens. Do not expect an immediate avalanche of eggs. Karswood works naturally, not suddenly. Within a fortnight or three weeks you will notice a decided improvement in the health, virility, and productiveness of the Karswood birds.

NOTE THE ECONOMY.

1s. packet supplies 20 hens 16 days.

2s. packet supplies 20 hens 32 days.

13s. tin (7lbs.) supplies 140 hens 32 days.

14lbs. tins, 25s. 28lbs. tins 45s.

Makes 12 Hens Lay for ½d. a Day.

AGENTS FOR SOUTH AUSTRALIA—

S. C. EYLES & Co.,
CURRIE ST., ADELAIDE.

KARSWOOD POULTRY SPICE

"Makes 12 hens lay for ½d. a day."

stack. Mr. Guthleben favored deep ploughing for oats and sowing the two crops separately. Mr. V. R. Tee favored Sunrise oats and King's White wheat for hay. The meeting then discussed the value of cocky chaff as feed. Mr. V. Tee considered that the chaff should be run through the cutter with the hay. Mr. Guthleben had found it a good plan to scald cocky chaff and cover it with bags over night. The horses would then eat it more readily, and keep in better condition.

MARAMA.

May 26th.—Present: 12 members.

COLT BREAKING.—Mr. A. C. Greig read the following paper:—“To break in or educate a young horse, it is first necessary to provide a good, strong yard. Move about the horse quietly until it is possible to approach the animal, then place a halter in position. Blindfold the colt, and place a bit in its mouth, and a caferon and crupper on it, then rein the colt up for a time and allow it to become accustomed to the bit. After a while, the reins can be shortened so that they will make the colt carry its head and neck properly. A rope and bran bag can now be placed on its neck, and the animal tied up to a strong post in the middle of the yard. The colt is sure to pull back, but after it has settled down, and will stand quietly without pulling on the rope, a bag should be placed on a stick and held quietly to the nose of the animal. Let it smell the bag, and the colt will find out that the person in the yard does not want to hurt it. When the young horse is not frightened, rub the bag and stick gently over its head and ears, and make it as quiet as possible. When the horse does not kick at the bag, place two ropes on to the bit. The ropes must be long enough to reach behind the colt so that it cannot injure the man. The ropes should be pulled quietly around the rump of the colt. Give the colt a chance to become accustomed to feeling the rope rubbing up and down its legs, so that it will not be frightened or kick at the reins. Then pull the head of the colt from one side to the other, and after this has been done a few times, the colt can be released from the post and driven around the yard first one way and then the other, until it will move in either direction. Give the colt a few minutes rest, then try to teach it to back. If the colt does not do this readily, pull on the rein, and when it starts to back, allow the ropes to slacken. If the colt will not back by a straight pulling, try pulling sideways, and so soon as the colt moves quietly, lower the ropes and keep pulling one side to the other until the animal understands what is required. If it is to be ridden, tie it up to the post, and then approach the animal with the saddle. Allow the horse to smell the leather, rub it on the mane and neck, and along the wither to the back. Now that the saddle is on the back, a piece of wire should be used to catch hold of the girth, because there is a danger of the colt kicking when the girth comes around the belly. Buckle the girth up gently until it is sufficiently tight. Release the colt from the post, and allow the animal to run around the yard. After the colt has been ridden and has quietened down, pat it, but do not try to frighten it, that makes many horses buck that otherwise would be quiet. Make the colt go around the yard a few times, first one way and then the other, then get on and off a few times, and if one is anxious to accustom the colt to a whip, crack it a few times and rub the colt with it, but do not allow the whip to strike the horse. The colt can now be released and all harness removed. Leaving the halter on makes the ears sore and chafes the head, and when the horse comes in next day it will be found that it will be considerably quieter for being free from all harness. I favor breaking in all light horses to the saddle first, because they do not knock themselves about so much as when put in harness. All that is to be done is to put the blinkers on and allow the horse to walk about the yard, then drive it around the yard with reins and harness it to another horse; drive the two horses for about half an hour, the colt being harnessed first on the near side of the vehicle and the next time on the off side. Do not give the young horse too much to do at each lesson. The method suggested above is for horses from a run or station. In breaking in draught horses, practically the same treatment can be followed as for light horses. When the heavy colt is educated up to the point of being harnessed, put on collar and hames, and attach chains. Teach the colt to stand over, first one way and then the other. Then place the chains on the hames with the hooks towards the hame hook, or hook the hame hook in the link next the chain hook, and



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**"Little Wonder" 2-Stand
SHEARING OUTFIT.**

Has an unequalled record all over Australia for practical, reliable work. Its compact build, simplicity of operation, and convenience for moving from place to place provide an explanation of the fact that there are more "Little Wonder" Outfits in use than all other self-contained shearing outfits combined.

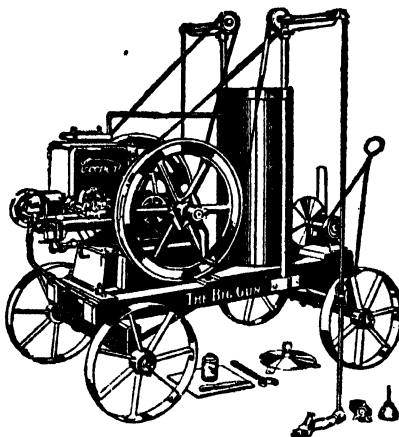
THEN THERE IS THE BIG PLANT FOR
BIG WORK, THE :

COOPER "BIG GUN,"

2-Stand Portable Shearing and Crutching Outfit, constructed especially for those who desire a 2-Stand Outfit with a Heavy Duty Engine. Can be supplied either Stationary or Portable.

COOPER SILENT RUNNING
OVERHEAD BELT-DRIVEN
SHEARING GEAR
and "Air-cool" Handpieces are
GENUINE MONEY SAVERS. They
cost less in the first place, and save in
reduced cost of upkeep ever afterwards.

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place a rope on the large links of the chain, because the hook is dangerous to the young horse, and it is necessary that the colt should feel the chains against its legs. The colt can now be made to drag the chains and ropes, and by pulling on the ropes the colt will learn to stand up to the collar. When it will do that, I would harness the horse to a light log and allow it to drag the log. To make the education thorough, the chains should be removed, and the saddle and breeching put on, and the colt driven around for a little while. All the harness should then be removed and the colt given a rest until the next day, when it should be harnessed and placed in the shafts of the wagon. Lift the shafts up and fasten them to the front rail of the wagon with a rope. Then lower them down on to the horse. Place a hame strap into the bottom ring of the winkers under the chin, and then pass two ropes through it—one into the other shaft horse's collar, at the bottom, and make it fast, and one from the collar of the colt on to the wagon wheel. Then lower the shafts down on to the colt with a kicking rope and make fast to the inside shaft; bring it over the rump through the ring of the breeching, and make it fast to the shaft. Put a belly band on, and it will be impossible for the horse to get out of the wagon. The long rope that goes back to the wagon wheel should be taken off."

MONARTO SOUTH (Average annual rainfall, 14in. to 15in.).

June 14th.—Present: 15 members and three visitors.

JIBBING HORSES.—In the course of a short paper dealing with this subject, Mr. J. Hartmann said there were two types of jibbing horses—one which was a born "jibber," the other the horse spoiled by overloading. The horse which was a "jibber" by nature was of very little service to the farmer, because it had to be kept in constant work. If such a horse were given a couple of months' spell, the whole performance of trying to break it of the habit of jibbing would have to be gone over again. The best plan to cure a jibbing horse was not to feed it for a day or two. A young horse when being broken in should not be worked alongside a horse which was not staunch, otherwise it would soon learn the tricks and habits of the "jibber."

MYRLA.

June 14th.—Present: six members.

FENCING.—The following paper was contributed by Mr. H. J. Zibell:—"Among the many improvements that may be effected on a farm, fencing is generally considered to be one of the main items. So soon as the first blades of the newly-sown crop appear, the pioneer is faced with the problem of keeping his stock within bounds, and in order to overcome this difficulty, a fence is erected. A makeshift fence may sometimes answer the purpose quite well, but frequently it acts only as a menace to livestock, and the problem is not solved until a substantial fence is provided. Such a fence, however, costs a considerable amount of money at the present time, but when compared with the time lost in hunting either your own or neighbour's stock off the wheat, the damage done to the crop, the danger of losing a valuable team of horses, the animosity caused between neighbors, the erection of a barrier worthy of its name will compensate the farmer for the money thus spent. To erect a good cattle and sheep-proof fence, the cheapest and speediest method is to obtain iron posts, and use three of these and one wooden post to every chain of fencing. The fence should be 4ft. 4in. high, and consist of five plain wires and one barbed wire. The barbed wire should be placed on the top of the posts. A No. 8 plain wire should be placed 10in. below the barbed wire, and No. 10 wires spaced 8in., 7in., 6in., 6in. apart respectively, leaving the bottom wire 6in. above the ground. All wooden posts should be of grey mallee or pine, and should be placed 20in. into the ground. All corner and gate posts, including strainers, should be 2ft. 6in. in the ground and show at least 4in. above the top of the fence, and be provided with good solid stays, connected into the posts between the top and second wires. A cattle-proof fence cannot be classed as substantial unless it contains at least one barbed and two No. 8 plain wires, with the barbed wire on top of the posts and the plain wires 12in. and 11in. apart respectively.

NEW RESIDENCE (Average annual rainfall, 12.50in.).

June 11th.—Present: 17 members.

COLT BREAKING.—Mr. H. Klau read the following paper:—“When the colt is being broken in, it should first be run into a crushpen so that it cannot hurt itself. Next, a halter should be placed on its head, the bit placed in its mouth, and the colt allowed to stand in the yard for a short time. The main point to which the coltbreaker should give attention, is to find out the nature of the colt, because very often a young horse is spoilt by handling it incorrectly. The coltbreaker should not be quick tempered, but should be kind to the colt; but at the same time the man should give it to understand that he is the master. The whip should be used with moderation. If a colt is fairly quiet it should be put between good horses and be taught to move along with them, but if it is very free or kicks, it is advisable to work it without the assistance of other horses. After it has learnt to walk quietly, a pair of long chains should be hitched to a log. After a few days of such work, the colt should be fit to take its place with the team.” In the discussion which followed, Mr. W. Schier favored the use of a whip for teaching the colt to back. The advantages were several—firstly, the colt so trained would always lead well going to and from work; secondly, when a horse which was loose in the yard was being harnessed it would always turn towards the teamster, whereas a horse not handled with the whip would often turn with its back to the person in the yard, which was very dangerous, because the horse might kick. The colt should be held on a rope fastened to the winkers, and the whip should be used on the legs until the horse moved after the “breaker.” Most members favored using the whip to make a colt lead, but all were of the opinion that it could be overdone. Mr. E. Eckermann asked whether it was advisable to tie up a colt overnight. Mr. Kassulke did not

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favor that practice, but if no yard were available it was a good plan to tie a rail behind the horse so that it could not get too far away. Mr. H. Klau, in reply to a question, preferred open winkers, because if a colt were broken in with an open bridle and happened to loose it headstall, there was not so much danger of it bolting, because it would be accustomed to seeing everything alongside of it, whereas if winkers had been used it would become frightened, and probably cause an accident. The age of breaking in a colt was then discussed, and Mr. H. Klau said although a colt two years old was in most cases more easily handled than a three to four years old animal, yet he advised farmers not to break them in too early, although occasionally handling at one and two years was a very good method, because a colt once handled never forgot.

WINKIE.

June 16th.—Present: 11 members.

BUDDING AND GRAFTING.—Mr. L. A. Chapple, of the Berri Branch, gave a budding and grafting demonstration, and read the following paper:—‘Budding and grafting trees and vines has been practised for centuries. There are many methods in use, each having its value according to the class of work to be done. Grafting may be classified as follows:—Root grafting, crown grafting, stem grafting, and top grafting. Root grafting is usually practised when a hardy stock is required on which to work. For instance, blight resistant stock for apple trees; whip grafting, splice grafting, or veneer grafting are most suitable methods for this class of work. These three methods of grafting may be used on very young seedling stocks as well. The whip graft is accomplished by making a long, slanting cut at the top of the stock with a sharp knife. The knife is then placed on the cut surface near the top of the stock and the stock split, thereby forming a tongue. The same form of cut is made in the lower end of the scion, making another tongue to fit into the split in the stock. The two parts are then forced together. In order to bring the growing part of the stock and the scion together, the edge of the scion and the stock must be even on one side. When root grafting is performed, all that is then necessary is to bind the two together, and plant with the graft just below the surface—the soil will keep out the air. If top grafting or stem grafting is to be done, the wound must be properly dressed with grafting wax. Splice grafting is the same as whip grafting, only that no tongue is cut. The sloping surfaces of the stock and scion are brought together and securely bound, care being taken that the sap edges correspond on one side. Veneer grafting is done by removing a notch by a slanting cut at the top of the stock, and a corresponding notch from the bottom of the scion, and binding the two parts together with the sap edges in contact on one side. Crown grafting is most suitable for vines. The scion is inserted into the stock at or below the surface of the ground. To perform this class of grafting the method known as ‘cleft grafting’ is used. The vine is sawn off just below the surface of the ground, and the stock split through the centre with a chisel or other suitable tool, and the cleft wedged open for the insertion of the scion. Scions should contain two or three buds, and be made from the previous season’s growth. The scion is cut to a wedge shape at the butt end, one edge being thicker than the other, and it is set into the stock with the thickest edge to the outside. This will hold the scion firmly at the outer edges where the growth takes place. The lowest bud on the scion should be just above the upper edge of the wedge, and will come close down to the top of the stock. Great care must be used in getting contact between the growing tissue of both stock and scion. In order to be sure of this, the scion may be set at a slight angle, so that the growing wood of the scion will cross that of the stock at some point. Two scions are placed in the stock, one each side of the cleft. Having the scions in place, the wedge is removed, and the stock bound at the top with a piece of binder twine or other suitable tie; a piece of paper is placed over the cleft and the hole filled in, the soil being mounded up to the top bud to keep the scion from drying out. If the ground is hard and lumpy, sand should be used. *Stem Grafting.*—The trunk of the tree is severed, and either cleft grafted or bark grafted. In either case, grafting wax must be used in covering the wound. Bark grafting is probably the better of the two methods to use in this case, because the cleft allows the weather to damage the stock, and

perhaps cause permanent injury to the tree. Bark grafting is done by cutting the lower end of the scions to a thin wedge and inserting them between the bark and the wood of the stock, two or three scions being used. After the scions have been inserted, the graft is completed by the usual binding and waxing. Another way of inserting the scions is to slit the bark with a knife, raising one edge and leaving the other securely attached to the stock. The scion is cut with a long, slanting cut, and the edge of the bark slightly pared off to give contact where the bark of the stock is left attached. It is then bound up as usual. This kind of graft is suitable to use in filling in a branch in a badly-balanced tree. All that is necessary is to slit the bark and insert the scion, using grafting wax and a shield of leather tacked on to the tree to secure the scion. Top grafting is usually adopted when working over an old tree. The main branches are cut off, leaving stumps, say, 1 ft. long, into which the scions are inserted. Cleft or bark grafting may be practised, but I recommend the bark graft for the reason previously stated. When working an old tree, it is advisable to leave a branch uncut to furnish foliage for nourishing the roots or the tree may die. This branch can be removed when the scions have made sufficient growth to function properly. All grafting should be done when the sap is rising in the stock, just before the buds burst. Scions should be selected only from best bearing stocks at pruning time. These scions are tied into bundles and buried in slightly-moistened sandy soil until the stock is ready to receive them. One of the most important points in connection with grafting is the care of the new growth from the scion, and the suppression of all shoots coming from the stock. This new growth will be very rapid, and care must be taken to protect it from wind. In the case of vines, the young shoot should be brought up to the wire by the usual string method, and the vine should then be formed. In the case of a tree, stakes should be placed in position to which the new growth can be tied when ready. Neglect to do this will mean serious loss. Where vines have missed, and the surrounding vines have made too much growth for a young vine to make a start, and where it is difficult to get layers long enough, larger grafting may be resorted to. To make grafting wax use 4 lbs. resin, 2 lbs. beeswax, 1 lb. tallow or linseed oil. Break up the resin and beeswax, and melt together with the tallow or oil. When thoroughly melted and mixed, pour the mixture into cold water, and when cool enough to handle it should be worked with the hands until it is light colored and grained. Grease the hands before handling. In applying the wax, the heat of the hand is sufficient to soften it. If the wax is not hard enough, add a little extra resin and beeswax. *Budding.*—This form of propagation may be used any time during the summer and fall months, providing the sap is flowing freely in both stock and scion. It consists of inserting a single bud under the bark of a stock. Most deciduous trees, as well as citrus, readily lend them themselves to this method of propagation. In the case of nursery stock, the stock should be at least as thick as a lead pencil. If old trees are to be worked, the main branches should be cut off in the winter as for grafting, and when the new growth has made enough headway to receive the bud, the operation may be performed. When budding, only take buds from trees that are noted for their good qualities. A bud stick should be taken of the current year's growth. The leaves are cut off, leaving the stem attached to the bud stick. This stem will serve as a handle to push the bud into place in the stock. The stock should be prepared by removing all leaves and twigs from the area to be budded. This work should not be done before the day the buds are to be inserted, or the sap will stop flowing freely and the bark set. In the case of young nursery stock, the bud is usually inserted 3 in. or 4 in. from the ground. The bud is cut by starting a sharp knife in about ½ in. below the bud and running out about ½ in. above the bud. It will be found that a thin strip of wood has been removed with the bud. This is better taken out, and may be done with the point of the knife and the thumb, pulling it out from the end above the bud. If this is done, it will be found that very rarely will the bud pull out with the strip of wood. A T-shaped incision is made in the bark of the stock, and the flaps of bark on either side loosened, preferably with the handle of the budding knife. The bud is then placed under the flaps and pushed firmly into place. The bud is then bound firmly into place with raffia or narrow strips of calico or other suitable tie. In about three weeks these ties should be loosened or removed, a strip of bark removed above the bud to start it into growth, and the greater part of the top of the

tree cut away. The piece of branch left above the bud may be used to which the new shoot can be tied for support, and afterwards it can be cut away. All other shoots coming from the stock should be suppressed. In the case of an old citrus tree, it is advisable to top the shoots coming from the stock, leaving them for a time to protect the bark of the stock from the heat of the sun.'

BARMERA, July 14th.—Mr. H. Levien delivered an address, "Mid-winter Cultural Practices," and an interesting discussion followed.

CLAYPAN BORE, July 14th.—Mr. J. Gray read a paper, "Does it Pay to Grow Fodder Crops for Grazing?" and a keen discussion followed.

GLOSSOP, April 29th.—The Horticultural Instructor (Mr. Geo. Quinn) gave a pruning demonstration in the afternoon before a gathering of 50 members at Mr. Stacey's block.

On June 19th, 41 members paid a visit of inspection to Mr. F. Olorenshaw's orchard at Renmark, where a most instructive afternoon was spent examining the methods of cultivation, irrigation, and watering employed on Mr. Olorenshaw's property.

HALIDON, June 18th.—Mr. J. E. Westover intimated that he was carrying out a series of manual tests, and extended an invitation to all members to make an inspection of the plots.

LAMEROO, June 14th.—The subject, "Conservation of Fodder," formed the title of a paper contributed by Mr. J. L. Koch. A keen discussion followed the reading of the paper.

MOOROOK, June 11th.—Nineteen members and 12 visitors attended the June meeting, when Mr. S. R. Cockburn delivered an address, "The Value of Artificial Manures in the Orchard."

MOOROOK, July 8th.—Twenty members and 18 visitors attended the July meeting, when the Deputy Horticultural Instructor and Manager of the Berri Orchard (Mr. C. G. Savage) delivered an address in which he dealt with various interesting subjects relating to pruning and the work of the competitors in the recent competitions.

MYPOLONGA, June 20th.—Mr. Murray gave an address, "Marketing Fruit." The officers for the ensuing year were also elected.

MYPOLONGA, July 3rd.—Twenty-six members and 12 visitors attended the meeting, when addresses were delivered by Mr. C. J. Tuckwell (member of the Advisory Board of Agriculture, Mr. C. G. Savage (Deputy Horticultural Inspector and Manager of the Berri Orchard), and Mr. E. Leishman (Orchard Instructor and Inspector).

PARILLA, June 13th.—The subject, "Tractor v. Horses," provoked an excellent discussion for the June meeting, the members being of the opinion that at the present time the upkeep of the tractor was too expensive for the mallee districts.

PARILLA WELL, July 14th.—Mr. C. Burford read a paper, "Tillage of the Soil," from the *Journal of Agriculture*, and an interesting discussion ensued.

TAPLAN, June 17th.—The Hon. Secretary (Mr. P. R. Hodge) read a paper from the *Journal of Agriculture*, and an instructive discussion ensued.

TAPLAN, July 15th.—Mr. D. Chancellor read a short paper, "Tractor v. Horses," in which he expressed the opinion that this district was unsuitable at present for tractor farming on account of the prevalence of stumps, and also because of the sandy nature of the country. He considered a good team of horses would do the work more economically and more satisfactorily. The paper was discussed by Messrs. H. Muller, P. Burridge, E. H. Schulze, G. Vogel-sang, B. Teusner, G. Follett, P. R. Hodge. Members agreed with the writer of the paper that for certain work the tractor was very satisfactory, but for general farm use in this district, for a few years, a good team of horses held first place.

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WAIKERIE, July 11th.—The Superintendent of Experimental Work (Mr. W. J. Spafford) attended the meeting and delivered an address, "Manures and Fertilisers." The report showing the work done by the Branch during the past year was presented by the Honorary Secretary (Mr. H. W. Lehmann) and the officers were elected for the ensuing term.

SOUTH AND HILLS DISTRICT.

ALDINGA.

June 18th.

Twelve members and visitors attended the annual meeting of the Branch. The report of the work performed by the Branch during the past year was read by the Hon. Secretary (Mr. E. T. Martin), and the officers were elected for the ensuing term. Mr. C. Lovelock read a paper, "The Agricultural Bureau," in which he urged members to attend the meetings punctually and regularly. Referring to the advantages that were to be derived from an intimate association with the Bureau, Mr. Lovelock said that it gave the younger members the opportunity of expressing their views on different subjects, thereby gaining information and knowledge that perhaps would not have been brought forward had they not been members of the Bureau. It also helped members to gain practice in public speaking, which would often prove useful. Some members could not be induced to write a paper to be read and discussed at a meeting, but that should not be, because it was not altogether the way the paper was written or worded that was of so much importance, because the paper, however good, only held the ideas of the writer, whereas in the discussion the ideas of all the members were heard. The Bureau also did a splendid work in spreading the information of the Department of Agriculture to the men on the land. Every home should receive a copy of the *Journal of Agriculture*. In most districts there were men who had paid particular attention to either one branch of agriculture or another, such as sheep breeding, dairying, pig raising, horse breeding, wheat selection, &c., and these men, by giving papers, gave those farmers who were not so successful in the subject being dealt with an opportunity of gaining first hand information. Again, there were the lectures of the expert officers of the Department of Agriculture, who visited the Branches from time to time, and told members of the results of different experiments that were being carried out for the advance of the science of agriculture. Membership of the Bureau enabled the man on the land to obtain expert advice by inquiring through the Branch on any question relating to stock and agriculture.

BLACKHEATH.

July 11th.—Present: eight members and visitors.

RABBIT DESTRUCTION.—The following paper was contributed by Mr. G. Nicholls:—"The rabbit is one of the worst pests to landholders, and yet some do not seem to regard it as such, even when it is known that 10 rabbits eat as much as one sheep. There are various ways of dealing with the pest, but trapping with steel traps and fumigating are the methods generally practised. Fumigating with bisulphide is most successful, on ground which is not rocky. One method of applying bisulphide of carbon is first to block up all holes, excepting two or three according to the size of the warren, then soak a piece of cotton waste in bisulphide, and with a pair of tongs, push it as far as possible into the holes left open, and then thoroughly block the remaining holes. On grazing land or where the rabbits are plentiful, the poison cart has proved a success, or if a poison cart is not available, ploughing a furrow, and then dropping the poison baits in afterwards is a very good substitute. Rabbits take the poison best when there is no green-feed available, February or March being the best months for laying poison. Fumigat-



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ing with a tractor has been tried recently with success. A pipe is placed on the exhaust of the tractor, then the end of the pipe is placed in the burrow, and the burnt gases from the tractor are blown into the burrow for about five minutes or more, according to the size of the burrow, then the holes are filled in. The most permanent solution to the difficulty is to wire-net the property. Then one can trap and fumigate within the netting without outside rabbits coming in and again opening the burrows."

CHERRY GARDENS (Average annual rainfall, 35.03in.).

June 19th.—Present: 11 members.

PRUNING THE VINE.—In the course of a short paper dealing with this subject, Mr. W. H. King said before pruning operations were commenced the secateurs and saw should be sharpened so that the wood would be cut clean. The correct time to start was when the leaves had fallen, starting on those varieties which first shed their leaves. With the spur vine the operator should consider the growth of wood made by each vine during the year, and if the growth was coarse, an extra spur or shoot could be left. The middle of the vine should be left open in order to allow as much light as possible to gain access to the foliage. All water shoots should be cut as close as possible, except in cases where they were too high, or too far out. In such cases, one bud could be left so that it could be cut back the following year. All dead wood should be cut out, the spurs being allowed to carry two buds, being cut about half way between the second and third buds. With rod pruning, he favored a two-budded spur, with a 3ft. 6in. rod well twisted around the wire. The arms of the currant vines should run each way along the wire, with a spur and a rod if necessary every 9in. apart and about 3ft. 6in. high, and a double wire so that the rods could be tied down to the bottom wire. Where there was only one wire, he favored the finger and thumb in order to separate the foliage as much as possible. The report of the work performed by the Branch during the past year was presented by the Honorary Secretary (Mr. A. R. Stone), and the officers were elected for the ensuing term.

CHERRY GARDENS.

July 15th.—Present: 13 members.

PIG RAISING IN THE HILLS.—"Pigs will live on food that otherwise would be wasted, and there is no doubt that they can be profitably raised in the hills," said Mr. C. Ricks in the course of a paper dealing with the above subject. For three months prior to farrowing, the pigs could be fed on waste apples and pears, but the month preceding the birth of the young pigs the sows should be given pollard or linseed meal. In addition to fruit, he had fed skim milk, scraps from the house, cabbage leaves, and other waste green stuff from the garden. The sows should be kept in good condition, then there would not be any trouble with weak litters. Mr. Ricks then referred to the fluctuating pig population of the Commonwealth, and stated that he did not think the present good prices that were ruling for pigs would hold for a very long period. However, he believed that even if there were a fall in prices, pigs could still be raised profitably in the hills. He favored the Berkshire sow mated to the Mid-York boar. The pigs should be provided with plenty of room in which they could exercise. When that was done, there were no objectionable odours, and the animals kept in a strong, healthy condition. For the young pigs, good, warm and dry quarters with slab floors were essential. An interesting discussion ensued, and Mr. Ricks replied to numerous questions.

KANGARILLA.

June 19th.

ANNUAL MEETING.—The Honorary Secretary (Mr. E. Butler) presented the annual report, which read as follows:—"I have much pleasure in presenting this, the second annual report of the Kangarilla Branch of the Agricultural

Bureau. The first annual meeting was held on August 10th, 1923, when the officers for the year were elected. The retiring president, Mr. R. G. Morphett, was re-elected unopposed, and Mr. George Butler was appointed vice-president in place of Mr. Geo. Connor, who resigned upon accepting the presidency of the newly-formed Branch at McLaren Flat. Mr. V. Biddle, vice-president, Mr. T. O. Golder, committeeman, and Mr. E. Butler, honorary secretary, were again elected. In complying with regulation two, one-third of the members, those who had attended the least number of meetings during the year, retired. Most of these were re-elected on the recommendation of the Branch. During the

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year 10 ordinary meetings have been held, and a comprehensive programme of work has been successfully carried out. At each meeting members have shown their interest in the work of the Branch, and good discussions have followed the reading of papers or lectures. A lecture on "Orchard Pests" was given by Mr. Geo. Quinn, Horticultural Instructor, the McLaren Flat Branch being well represented at this meeting. A lantern lecture, "Across Australia," by Capt. S. A. White, is worthy of special mention. His address was listened to by a large and appreciative audience of members and friends, the senior classes of school children being well represented. Early in the year the Meadows Branch was approached to see if an exchange of papers could be brought into operation. That Branch quickly and readily entered into this scheme, and three of their members, Messrs H. B. Michelmore, S. Smith, and W. Durward, have each in turn paid a visit to Kangarilla, and their papers or lectures have been greatly appreciated by members of this Branch. In return, Messrs R. G. Morphett and Geo. Connor have contributed papers at the Meadows Branch. We hope to extend operations in this respect during the coming year, and include in our next syllabus members from Cherry Gardens, Clarendon, and McLaren Flat. We hope by this means to stimulate interest in the work of Branches, and are looking forward with the hope of this scheme becoming an accomplished fact, and we feel that many profitable and enjoyable meetings can be spent together under this system. Most of the papers submitted by Branch members have been printed in the *Journal of Agriculture*, and we sincerely hope that this state of efficiency will prevail during the coming year. During July, 1923, a social evening was held, and representatives from Cherry Gardens, Clarendon, and Meadows were present. This Branch was represented at the annual congress by the president and Mr. A. Bottrill. The Department of Agriculture was approached regarding a 12 months' volume of the *Journal of Agriculture*, and a beautifully bound book was sent on to us. This volume is from August, 1922, to July, 1923, and we have practically a complete record of the papers or lectures submitted by members and others from the inception of this Branch. This book is greatly appreciated by the members and is freely used by them. At a meeting held in December to consider what steps should be taken concerning an exhibit from this Branch to be entered at the Meadows Show, the following resolution was unanimously carried: "That this Branch enter an exhibit, and all members pledge themselves to support it." Interest was very keen, and members loyally co-operated to make this exhibit one worthy of the district. The ladies who were interested in us were invited to help, and much credit is due to Mesdames J. White, F. W. Thorpe, W. J. Golder, E. Holder, and S. Paddick for the assistance that they so readily gave. These ladies worked hard at their various duties, and it is largely due to their efforts that we were awarded first prize. It was felt that better means should be provided to show the exhibit from this district to its best advantage. Timber was purchased for that purpose, and made into a suitable platform, which has given entire satisfaction. In the two years of its existence this Branch has entered two exhibits at the Meadows Show, and on each occasion has secured the highest honors. We hope next year to place something even better upon the stand. We started the year with a roll strength of 39, which has increased to 46, seven new members having been admitted to this Branch during the year. We take this opportunity to welcome any who have not yet joined our ranks. The average attendance for the year is 13. The annual subscription paid by members is 2s., and this is to pay hire of hall and any incidental expenses that may be necessary. Financially we are in a sound position, the balance-sheet showing a credit balance of £11 1s. 5d. In conclusion, I would like to thank the members for their loyal support during the past year, and sincerely hope that they will continue to be zealous in any duties that may rest upon them, and that interest will be increased in the work of this Branch. This is a young Branch, and the success or failure lies in their own hands. It will be to each one just what he individually makes it, and my greatest hope is that this Branch of the Agricultural Bureau will prove a live and powerful institution, and that the year we are just entering upon may be even better in every way than the one we have just passed through."

MACGILLIVRAY (Average annual rainfall, 19in. to 20in.).

May 13th.—Present: eight members.

EUCALYPTUS OIL ON KANGAROO ISLAND.—The following paper was read by Mr. H. J. Wiadrowski:—"Many people do not realise the value of the eucalyptus oil industry to Kangaroo Island. At the present time we only produce about £4,000 to £5,000 worth of oil each season, but this production could easily be increased to £50,000 per season, and even at that figure half of the raw material at hand would not be used, nor would that quantity in any way effect the market, or if so, only in favor of the distiller. It is a well known fact that Kangaroo Island oil is superior, medicinally, to the oil distilled elsewhere, but it is produced in such small quantities, that apart from local buyers, the distiller does not reap any advantage of a higher price than that obtained for the inferior oil of other States. The narrow leaf mallee does not grow all over the Island, and even on some parts where it does grow, it does not yield the same quantity of oil as that growing in other parts, but wherever a good class of leaf grows, I am convinced that it is considerably more profitable to carry on distilling than it is to grow grain. Another advantage the oil industry has over grain growing on the Island is the expense of carting the latter. Further, the oil industry is not so much at the mercy of the weather. Payable returns can be obtained in the driest seasons, and very wet years, when the grain crops are swamped and water-logged, are the most profitable for the distiller. Using a wagon instead of a dray for carting the leaf is a considerable factor in increasing the cost of production, because it first means more or less waste of time in driving through the scrub, whereas with two horses driven tandem in a dray many places can be driven through that would have to be avoided with horses abreast, as in a wagon. Again, putting the leaf into the vat can be done by one man when a dray is used, in about the same time that two would take to do it when the load is on a wagon. Another important

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factor in the successful working of a "still" is the size of the vat. This should be not less than 1,000galls. capacity, but not much more than 1,200galls. A smaller vat than 1,000galls. takes the same time to "cook out," practically the same time to fill and empty and adjust the lid, chains, &c., but the amount of oil obtained is, of course, less; hence the cost per pound is more. The type of furnace is another important item effecting the cost of production. A furnace should be so arranged that sufficient heat can be kept to enable the distiller to be absent for at least one and a half hours, and yet the "still" to be "running" a good stream all the time. If a distillery is properly arranged one vat of used leaf, leaf from which the oil has already been extracted, should provide sufficient fuel to "cook out" three vats, so that for every three vats of leaf distilled, there will be two "stills" of spent leaf to dispose of. But, if as in most cases only two vats are "cooked out," with one vat of leaf, and in some cases even all the leaf is used for fuel, much unnecessary labor is involved, because the extra fuel has to be handled with the fork instead of being swung out of the way when pulled out of the vat, and burned where dropped. One man with a properly arranged distillery and a vat of a 1,000galls. capacity, can easily produce five tons of oil per season. At the low price of 1s. 3d. per lb., this equals £700. It requires 448 stills of leaf to produce this amount of oil, averaging 25lbs. per still, which is not a high average. Cutting the leaf costs 12s. per still, or a total of £268 16s., which leaves the distiller £431 4s. for his work and the use and upkeep of two horses. I have not allowed anything for depreciation of plant, because this, on a properly erected distillery, is very little. The above return is based on a very low price, for on present prices the net return would be £571 4s. for the same quantity. The complete plant necessary to produce that quantity could be erected for £300, and depreciation at the very outside would not be more than 10 per cent. These calculations have been based on a man working a "still" for 10 months a year and five days a week, doing two "stills" per day, which can easily be done in nine hours, allowing for carting, and if a settler has an abundance of raw material, he can increase the output by one-third. If the distiller has not sufficient raw material to carry on for the whole 10 months, his best plan is to work during December, January, and February. During these three months he should, by getting most of the leaf cut at the right time, average at least 35lbs. to the "still," and reckoning 13 "stills" for 13 weeks at five days a week, would produce 5,915lbs. of oil, at 1s. 3d. per lb., the net value of which would be £268 5s. 9d. At 1s. 6d. the net figure would be £342 4s. 6d. Cost of production is considerably lower for this period on account of the higher yield of oil obtained. As regards the work of distilling, some of the most successful distillers think this laborious, but this is clear proof that their distilleries are badly arranged. The first work is to cart the leaf to the distillery. To fill a 1,000gall. vat requires approximately one ton of leaf. This can be easily brought in on one load on a dray, and the size of the load would be about the same as one ton of sheaved hay, and the time required for loading, which is done by one man, varies according to the size of the heaps made by the cutters, but it can comfortably be done in one hour. This work compares favorably with loading hay, so that cannot be termed very laborious, especially as it would only take up two hours each day. On an average, the time spent in driving from the distillery to where the leaf is cut and back would be one hour per load, or two hours per day. On arrival at the distillery the dray is tipped and the leaf put into the vat. This work with the exception of treading or tramping the leaf, is even considerably lighter than putting on the load. The tramping in the leaf is certainly a little more tiring, but at the most only about 20 minutes is spent at this per vat, or 40 minutes per day, and pulling out distilled leaf is about equal to the tramping in, but this only takes about eight minutes per vat. The other work that has to be performed cannot be termed hard or disagreeable, and can be done by a boy of 12 years of age. The whole operation of emptying and filling can be comfortably done in 1½ hrs. by one man. I have done it with the assistance of a lad in 30min. Regarding wool production, I consider that this can be carried on just as successfully in conjunction with oil production as with grain, for I am fully convinced that it would be a profitable investment to cultivate the leaf

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country and grow fodder crops for grazing purposes. This would not harm the mallee to a very great extent, and the remainder could be cut more frequently and yield considerably more oil owing to the cultivations. I have been asked what I consider the most important factor likely to advance or assist the industry. I say, without hesitation, give Nature a little assistance by cultivating the soil, eradicating the useless scrub and undergrowth, and to propagating the narrow leaf where it now only grows sparsely. This last point seems to be the stumbling block, because the mallee is difficult to propagate; but when this can be successfully performed it will lead the way to machine cutting and reduce cutting expenses from about 6d. per lb. to 1½d. per lb., and will considerably increase the growth of leaf and yield of oil.

MOUNT BARKER (Average annual rainfall, 30.95in.).

June 11th.—Present: 28 members and three visitors.

CONCRETE ON THE FARM.—In a paper on this subject, Mr. H. Hunt explained with the aid of a blackboard how he and his brother had constructed a barn for curing tobacco leaf, &c. The concrete was made of gravel, sand, and cement. For a 10ft. wall, he used four parts of gravel, one part of fine gravel, one of sharp sand, and one of concrete. For a higher wall, less gravel and the same amount of concrete should be used. The materials should be well mixed when dry, turned twice and raked over thoroughly, water should then be added, and the mixture turned again and raked well. The 5/16in. rods should be placed 3ft. apart, and bent round into a loop at the joints to give good ties and the greatest strength. Moulds would be required for construction purposes. He used oregon, pine, and ordinary matchboard, and made the moulds about 4ft. high, using bolts to hold them in position whilst being filled. The concrete was allowed to stand in the moulds for two days; then for the third day with the bolts loosened, when the concrete was ready for the second storey, and so on until the building was completed. For the shed posts a box mould 7in. by 7in. was made, placed on end, plumbed true, the reinforcing rods put in, leaving the centre rod protruding, and then filled with concrete. The mould could be removed in about three or four days. Pigsties, stables, fowlhouses, cowsheds, and fencing posts could all be made in that way, being much cheaper and stronger than stone, and lasting much longer. Mr. Hunt then answered many questions, and explained how to make cement tanks, how to add cement to iron tanks, and the use of skim milk for mixing the cement for flushing purposes.

RAPID BAY.

May 30th.—Present: 24 members.

FENCING.—A paper on this subject was contributed by Mr. H. J. Jones. He recommended a 7-wire fence, consisting of six plain, galvanised, No. 8 wires, and one barb wire for that district. The first consideration was the selection of good timber. Either red or blue gum was suitable, but preference should be given red gum timber where it was available. Posts should be split to measure 6in. in width and 4in. in depth, and not less than 5ft. 6in. in length. Strainers should be cut 6ft. 10in. in length and 12in. in diameter at the small end. Prior to erecting a fence the line should be pegged into strains measuring about 10 chains where a line was straight and it was convenient to do so. When pegging lines it was an advantage to use sighting pegs the same height as the fence, because they made it easier to get the posts even on top. Strainer holes should be sunk to a depth of 3ft. Holes for split posts should be sunk 22in. deep and 9ft. apart. When sinking strainer holes, it was advisable to keep the subsoil separate from the top soil, so that when the posts were put up, the former could be put in first because it rammed together more tightly. The gauge he recommended for the fence was as follows:—The bottom wire 5in. from the ground, the remaining six wires respectively at distances of 5½in., 5½in., 6in., 6in., 7in., and 9in. Holes should be bored with ½in. bit or auger, and the barb lashed to the centre of the posts on top with No. 10 galvanised wire. It was necessary to put one strut in each strainer in straight lines of fencing, and two struts in strainers on angles. Gate-post struts should be cut from good, solid timber at

a length of about 8ft. and not less than 6in. to 8in. in diameter. He also recommended the horseshoe roller for straining those wires. During the discussion which followed, some members thought that the holes for the wires should be bored with a $\frac{3}{4}$ in. bit instead of a $\frac{1}{2}$ in. Others asked if the barb wire was better on the top or the side of the fence. The writer preferred it on the top, because he considered it made the fence higher, and it was not so dangerous to stock. His reason for advocating long strains of 10 chains or more where there was a straight line of fencing was that, from his experience, a long strain could be kept tighter than a short one. The best method of running a barb wire through the fence was as follows:—The posts should be bored with a $\frac{1}{2}$ in. auger and a plain wire run through to which was attached the barb that could then be pulled through by a horse.

ALDINGA, July 17th.—Mr. H. Low, who had recently arrived from Scotland, gave an interesting address, "Top Dressing Pasture Lands," and a keen discussion followed.

BLACKWOOD, June 16th.—Mr. G. W. Summers read extracts from the *Journal of Agriculture* referring to various methods of pruning Jonathan apples. A good discussion followed, the general opinion being that Jonathans required vigorous pruning, that the fruiting wood should be kept as close as possible to the main limbs, and that laterals should be pruned to three or four buds, not including the base buds. In reply to a question from Mr. A. K. Ashby, the manager of the Government Experimental Orchard (Mr. R. Fowler) reported that Granny Smith variety of apple in the orchard was not affected with woolly aphid, and the fruit had so far not shown any tendency to develop bitter pit.

KANGARILLA, June 13th.—Mr. W. Durward, of the Meadows Branch, attended the meeting and delivered an interesting address, "Private Forestry."

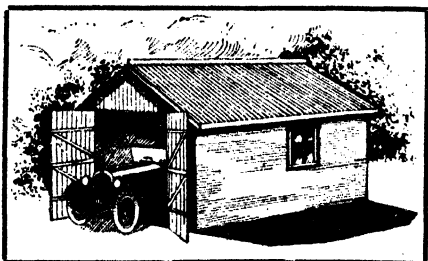
KANGARILLA, July 8th.—Mr. R. Cockburn delivered an address, "Top Dressing Pasture Lands" to an audience of 22 members and six visitors.

McLAREN FLAT, July 17th.—Mr. C. H. Beaumont (Orchard Instructor and Inspector) delivered an address, "Co-operation and Marketing Fruit in California," to a gathering of forty-eight members and two visitors.

MOUNT PLEASANT, June 11th.—Several subjects of local interest were brought before the meeting for consideration, and a keen discussion took place on the subject, "Top Dressing Pasture Lands."

PORT ELLIOT, June 18th.—Various subjects of local interest were brought before the meeting, and an interesting discussion followed.

ROCKWOOD, June 16th.—A paper dealing with the subject, "Sheep on Small Holdings," was read by Mr. A. E. Henley, and a keen and interesting discussion ensued.



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SOUTH-EAST DISTRICT.

NARACOOORTE (Average annual rainfall, 22.60in.).

May 10th—Present: 14 members.

MAIZE.—The Manager of the Kybybolite Experimental Farm read the following paper:—"The cultivation of maize in this district of the South-East is well worth consideration. It is classed as a cereal, but botanically it belongs to a different family. It has two flowers—the male flower growing on the top of the stem, and the female flower on the side of the stem. The origin of maize is somewhat in doubt, but its home country is usually considered to be America, it having been brought to Europe after Columbus discovered America. At the present time, America grows two-thirds of the world's crop. There are several varieties—known as 'sweet corn,' 'pop corn,' and 'flint corn.' What is known as the 'dent' variety is chiefly grown, and I intend confining my remarks to that variety. It is a crop most suitable for tropical and sub-tropical countries, because it favors heat and an abundance of water. In Australia it is grown extensively in the tropical and sub-tropical districts of Queensland and New South Wales, and in the latter State the cultivation of maize has developed into an industry of considerable magnitude. The possibilities of maize production in the South-East are good, because as a district it is damp, and the trials that have been made at Kybybolite furnish fairly satisfactory results, and there are other parts of the South-East better suited to the growing of maize. It can be grown either for grain or as a forage crop, but in this district, the forage crops should give the most payable results. Sufficient heat is received in this district during the summer to bring the crop along well, but, of course, that are odd seasons—like that of last summer—when the weather is too cool for the successful cultivation of the crop. During this year I expect the seed to ripen by the end of the month. At Kybybolite the period of growth is from 180 to 200 days. Water supplies are of first importance, because the crop requires about 15in. of water well distributed over the growing period. The soil most suitable for carrying the crop is a well-drained loam rich in humus. It is a rich feeder, and poor soils do not suit it. The preparation of the soil is also an important point, and the land should be ploughed before the winter, and worked a couple of times before seeding, but it is not necessary to work the land down to a fine tilth. As soon as the soil begins to get warm—early in the spring—the seed should be sown, but at Kybybolite the seed is not usually sown until October or November. For a forage crop, the seed is sown more thickly than when the crop is to be harvested for seed—say, about 20lbs. of seed to the acre sown through every fifth hole of the drill. The rows should be 3ft. 6in. apart, and the plants about 12in to 15in. apart in the rows. It is the practice on the Government Farm to use a skim plough, followed by two boys putting in the seed, and five or six acres can be sown each day. Stable manure is required to furnish humus for the crop, and super should be applied at the rate of about 2cwts. to the acre to hasten ripening. The 'dent' variety at Kybybolite has given returns as high as 54bush. to the acre. After seeding it is necessary to cultivate between the rows, and to continue working the soil through the summer months. Where the crop is irrigated, it is advisable to keep the surface of the land thoroughly stirred up, and not allow the plants to show any signs of dryness. It is necessary to apply three waterings, but the quantity will depend on the rainfall. The first watering should be carried out before Christmas, and the subsequent irrigations should also be performed during January and February, and also when the crop comes out in flower. Maize can be cut at any stage of growth for green feed, and it is an excellent crop for ensilage. The average yield is about two tons to the acre, the cost of growing being about 12s. per ton. This figure, I admit, is rather high, but it should be remembered that maize will provide succulent fodder during February or March, when there is but little green feed in the fields. Harvesting the crop for grain is a rather costly practice. In the first place, the cobs have to be left in the field until the winter is well advanced before they can be gathered. Sown in October, it would be May before the seed could be harvested. The cobs can be picked by hand, and it will take one man about one day to pick one acre, at a cost of about 6d. per bush. The husk is stripped off the cob in the field and the seed placed in a crib or small shed with open sides. The seed is placed in layers 1ft. to 18in. in depth, in order to provide for a circulation of air both through and under the seeds. A machine can be

purchased for doing the work for a cost of about £8, and it is able to do the shelling for 4d. per bushel. Maize makes a good feed when mixed with lucerne for cows, whilst if clover is used instead of lucerne, the fodder will be considerably improved. The grain cannot be used advantageously for milk production unless mixed with large quantities of nitrogenous food." A short discussion followed.

MOUNT GAMBIER (Average annual rainfall, 32in.).

June 14th.

NOXIOUS WEEDS.—Mr. G. Gurry, in a paper bearing this title, referred to the undesirable weeds which were to be found in the district. First he referred to the wild radish. "When land becomes badly infested with this or other undesirable weeds," he said, "its capital value is bound to be reduced, so that it is well worth while to take protective measures. Grain for seed should be graded or winnowed. Plants showing in the crop should be pulled, because, if neglected, it will mean endless work and worry. If brought under the Noxious Weeds Act, action which might appear drastic would need to be employed. The tulip, originally a garden plant, is to be found in many places in the northern areas of South Australia. This plant, which is claimed by some people to be poisonous at certain stages of growth, if eaten by stock unaccustomed to it, is perhaps one of the worst weeds with which land could be infested. There is at least one property in this district where it is making headway. Spread in the first instance from an old garden, it is gradually increasing its radius. Considerable attention has been given to stinkwort, because of the rate at which it is increasing in many parts of the district. It is to be found chiefly in grazing land, but flourishes wherever given a chance. Some authorities have stated that it does not reduce soil fertility to any great extent. It spreads rapidly, and is a difficult plant to deal with, because the seed remains in the land for a great length of time. Horehound has spread rapidly in many places during recent years, chiefly in old sheep yards, as well as on district roads. This plant will probably come under the Noxious Weeds Act, a resolution in favor of which was carried at the Agricultural Bureau Congress of 1923. Many weeds have made their appearance during recent years. Possibly some have come in with grain or grass seed from other places. The weed known as blue root is supposed to have been introduced in this way."

PIG RAISING.—The following paper was contributed by Mr. A. C. Bigham:—"I am of the opinion that pig raising is a very profitable sideline for dairy-men. It is better that farmers should keep their own sows, which, for preference, should be well bred Berkshires. Too many mongrel animals are kept. If good sows are mated with a pure bred Berkshire hog, good stock will be assured. The care a pig receives is all-important, and I maintain that the better the pig is cared for, the better it will pay. In the first place, the sow should receive more attention than she usually does. Half-starved mothers cannot produce strong litters. If the sow has a paddock of green fodder to roam on, it will do very well until within a week or two of farrowing, then it should be brought into closer quarters, so that it can receive some attention at farrowing time. Too many sows are allowed to farrow in the open, and many young are lost through straying away from their mother and perishing in the cold. The sow should receive its usual ration for a few days after farrowing. If extra food be given too soon, the sow becomes feverish and very often restless, and kills her young by lying on them. By keeping sows on the block the farmer is sure of having good stock for the fattening pen. It is easier to buy runts than good stock, and runts are dear at any price. After the young reach the age of two weeks, every endeavor should be made to get them to feed. In my opinion, pollard made into slop with milk or whey is best for young pigs. They should never be weaned until eight weeks old. Too many are anxious to wean at six weeks. They are too prone to receive a check if taken from the mother so young. If once checked a lot of time has been lost. To keep a pig growing all the time without letting it receive a check is the secret of success. If the young pigs do not receive a check until 10 weeks old the main battle is won. They can then be turned out to green pasture, and should do well with reasonable attention. The best green food for grazing slips and store pigs is Swedo

turnips. If sown early in September, this crop assures plenty of summer food. The land should be well worked before seeding, after which the crop receives no further attention. One of the most important points in pig raising is proper housing. It does not matter how well the pigs are fed, if they do not get a comfortable bed the best results cannot be secured. Whether it be on pasture or in the fattening pen, it is most essential to keep the animals comfortable.

TATIARA (Average annual rainfall, 19in.).

June 21st.—Present: seven members.

SEEDING.—Mr. A. E. Milne read a paper on this subject:—All wheat intended for seed, he said, should be carefully selected and cleaned, for which purpose an up-to-date grader should be used. It was necessary to set the sieves or screens to make a good sample of whole grain, free from foreign seeds, especially barley. Some farmers in the district grew one variety only, viz., Federation. This was a mistake, for there were other wheats that were well suited to this district. Given exactly the same soil, and that soil heavy, good ground, Federation would come out on top, but in some of the light soils, Major, Minister, and Queen Fan would give good results. He had grown World's Wonder, Break Wonder, Early and Late Gluyas, Gallant, Yandilla King, and Daphne. Seeding could not be carried on without the use of pickle in some shape or form. Many used bluestone and the cask with burr blocks to get the work over quickly, and one man could handle it comfortably. It was a good plan to weigh the wheat into 1½ acre lots; the man on the drill could then tell how much he was sowing. In that district, on well-worked fallow—not worked dry—they could sow the first week in May, and continue until one-half of the area was sown, then, if rain did not come, they could afford to wait a week or more. For seeding, they should have all the teams ready, and then when rain came, push on with the work, and, if possible, finish by the first week in June the wheat would then have strong roots to stand any against excessive wet. It was necessary to hurry seeding operations, and therefore he suggested the use of the combine, and would determine the size by the plough that was used. If, for instance, the farmer had a 4-furrow—which was usually worked with eight horses for fallow—he advised a 14 combine, but if the farmer used a 5-furrow, then with the nine horses generally used, he would put the 16-hoe drill behind the team, to save time changing swings, etc. In very "crab-hole" country, the 12 was used often, but that was unnecessary, because seldom did they find less than a 14 drill in the paddock. Many did not like the combine, contending that it sowed too deeply, but on good fallow the work could be done more quickly and more effectively with the combine than with the cultivator and the drill. Harrowing packed the ground around the plant, thus giving the seed a better chance to germinate, and levelled the ground for the harvesting machinery. "To summarise," he said, "work down a good seed bed, whether on fallow or rough ploughing; sow the best seed; and as soon as seeding time is at hand, push on with the work, and do it well. It is too late when the seed is coming up crooked and uneven to alter it, so do it properly at the right time." In the discussion that followed, Mr. H. G. Fisher considered an effective grader indispensable. He also made a practice of hand picking the crop, both for barley and oats. A change of varieties was desirable, taking care to clean the drill at each change. Bluestone and an equal weight of coarse salt made excellent pickle. He would not sow before rain, and thought drilling should be commenced the last week in May or the first week in June. Mr. W. Butler preferred seed grown on new ground and graded by the winnow, rather than that reaped by the harvester. He preferred formalin pickle, because growth commenced more quickly. He favored the combine, because depth of sowing could be regulated.

ALLANDALE EAST, June 20th.—Members discussed the subject, "Hand-rearing Calves." It was decided that in future meetings of the Branch should be held on Friday evening on or before the night of full moon.

GLENCOE, June 23rd.—Mr. A. Tregenza read a paper, "Strawberry Clover," which aroused a keen and interesting discussion.

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All communications to be addressed:

"The Editor, Journal of Agriculture, Victoria Square, Adelaide."

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T. BUTTERFIELD,

Minister of Agriculture.

INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

[Replies supplied by Mr. A. H. ROBIN, B.V.Sc., Stock and Brands Department.]

"H. H. D.," Langhorne's Creek, asks for solution to wash horses troubled with lice.

Reply—Use a tablespoonful of Lysol to a pint of warm soapy water, and apply it with an old scrubbing brush. You will have to persist in the washings in order to kill off the fresh crops of young lice as they hatch out, as the "nits" are extremely resistant against the effects of antiseptic washes.

"D. T. L.," Talia, reports sheep in good condition; the bladder bursts, filling the animal with water. The sheep falls away in condition, and eventually dies.

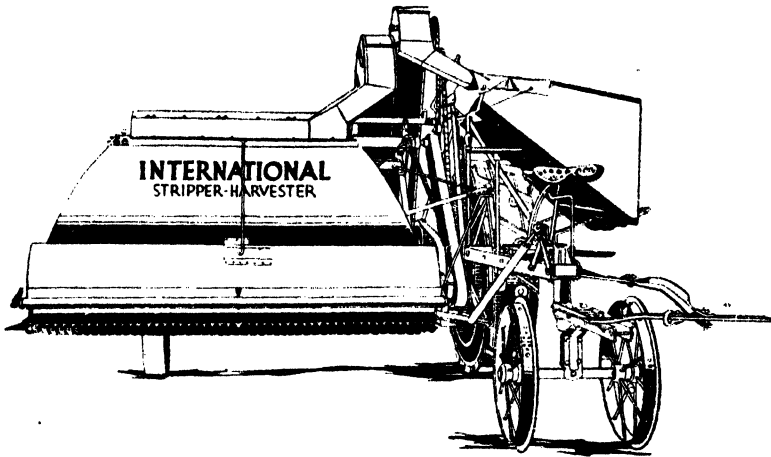
Reply—The condition of your sheep, as described, suggests a condition of dropsy, and this most likely would be due to parasitic infection of the sheep from the pastures. I would advise that if any more sheep die to make a close examination of the true stomach, that organ lying immediately behind the bible. Make a thorough examination in the folds of the mucuous membranes lining the organ for the presence of minute white worms, or, better still, perhaps you could forward to us one of the stomachs for examination. You should drench the sheep once a month with 1 per cent. solution of bluestone, made up as follows:—Dissolve $\frac{1}{2}$ lb. bluestone in a pint of boiling water, and add 3 galls. of cold water. The dose of this is 1 oz. for lambs, and 3 oz. for sheep over 12 months old. Remove the sheep to fresh pastures, avoiding, if possible, low-lying, swampy ground. Supply the following lick to sheep:—Ground bone meal, or superphosphate, 50 parts; common salt, 50 parts; powdered gentian root, 3 parts; powdered sulphate of iron, 3 parts.

"E. S. C.," North Bundaleer, has a young Berkshire boar very stiff in hind legs.

Reply—Keep the young boar separate from other pigs, in a warm and dry sty, and arrange an adjacent run so that he can get out for daily exercise. Feed well on good, rich feed, adding a packet of Epsom salts occasionally to keep the bowels in good order. Add skim milk to the ration. Put a small teaspoonful of baking soda and same quantity of sweet ground bone meal (or super, if you cannot get the other) in the feed night and morning.

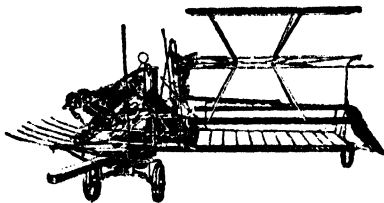
"F. J.," Cowell, reports blindness in cattle. The pupil of the eye becomes clouded. Similar to that of blindness in sheep.

Reply—This condition is usually due to the introduction of foreign bodies into the eyes, ranging from chaff and grass seeds down to minute particles of pollen grains and dust. When the eyes of one or more of a mob become affected, the condition may be transmitted to adjacent animals by contact, or by flies. Affected beasts should be separated from healthy ones, and if a number of a mob are affected at once, change of pasture is desirable. Treatment of affected eyes is usually satisfactory by the use of 1 dram of boracic acid in 4 oz. of boiled water, using it as often as convenient, applying it directly to the eye. The eyes should be examined for presence of any determinable foreign bodies.



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"J. F. M.," Borrika, has a cow very stiff in front legs; eats and milks well.

Reply—The cow appears to be suffering from an attack of "cripples," which is due to an insufficiency of lime in the system. Feed liberally on rich food, such as crushed oats, bran, and good chaff. Put two tablespoonsful of ground sweet bonemeal in the feed night and morning. If you cannot get this locally, you would be able to get it from the Adelaide Chemical and Fertiliser Company, Adelaide. Meantime, you could use a substitute for it; any available skim milk to be given to her as a drink or drench, or use some superphosphate in the feed in some quantities as bonemeal.

"H. S.," Rockleigh, has 4-tooth ram fed on natural pasturo, clover, hay, and oats; has developed lameness in front feet.

Reply—It would appear as if your ram had in some way jarred and bruised the front feet and tendons. Keep it comfortably bedded down and warm, and let it remain in the recumbent position a good part of the time, so long as the lameness persists. Give a purging drench of two packets of Epsom salts, one teaspoonful of ginger in $\frac{1}{2}$ pint warm water. Subsequently keep his appetite with varying forms of light, easily digested feed, and give one tablespoonful of the following mixture twice daily:—Powdered gentian root, $\frac{1}{2}$ lb.; sulphate of iron, 2oz.; common salt, 4oz.; soda bi-carbonate, 4oz. This may be given in sloppy feed, or if he will not take it in this way, mix the dose up with a spoonful of treacle to make a stiff, sticky paste, and using a flat stick, smear it on inside of mouth over back teeth and tongue, so that he has to lick it down.

"J. H. M.," Brady Creek, asks: Would it be safe to purchase cattle from a herd that 12 months ago had pleuro? and (2). is the disease transmissible from the mother to her offspring?

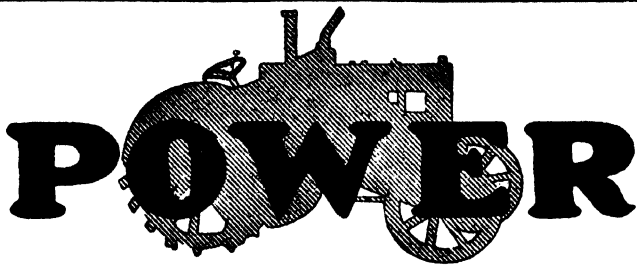
Reply—I recommend you not to buy cattle from a herd that has recently been troubled with pleuro. You may buy sound and healthy enough beasts from that herd, but you may, equally as likely, buy one or more which have the trouble in a temporary quiescent state. The season of the year when pleuro is most active is getting near at hand. If you were to introduce any "carriers" into a clean herd, they would spread the infection to it. If, however, the cattle were clean, they would not become infected. (2) Pleuro may travel through a herd or it may only affect one or more individual members of that herd. It is spread only by contact of healthy cattle with diseased ones; it is not hereditary.

"R. E. P.," Gorgetown, has a cow with two quarters of udder swollen and hard. Thick curdled milk and blood is drawn from the quarters.

Reply—The cow has an acute attack of mammitis in two quarters of the udder. If you have any other cows, she should be kept strictly isolated from them. Strip the udder four or five times daily, destroying the milk. Foment the udder with cloths wrung out in hot water and a little antiseptic for about 15 to 20 minutes at a time. Dry off carefully, and then rub in a little camphorated oil, kneading and massaging the affected quarters gently but firmly. Keep the teats of the two healthy quarters smeared with some boracic vaseline to prevent infection spreading to them. Give the cow a good purging dose of Epsom salts 1lb., ginger 2oz., treacle $\frac{1}{2}$ lb., dissolved in $1\frac{1}{2}$ to 2 pints warm water, and feed on light, easily digested feed. When the diseased condition has subsided, you will find it probably most economical to dry her off and fatten.

"O. E. K.," New Residence, has pony mare with sore on the forehead. The wound heals for a little while, and then re-opens and discharges matter. A boil has also formed below the eye.

Reply—There is evidently a small foreign body of some kind embedded in the wound, and it is quite possible that a small piece of bone of the forehead was broken off by the kick. Bathe the sore with hot antiseptic solutions. When the lower one is softened, open it with a sharp, clean knife and let the matter out. Search both wounds carefully for any foreign body, such as a piece of bone. Syringe out daily with antiseptic solutions, keeping them open until all discharge stops. A weak solution of tincture of iodine would be about the best to use. When the wounds cease discharging, keep all water away from them, and simply paint them daily with full strength of tincture of iodine.



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"J. T. H.," Yaninee, reports:—(1) horse, 12 years old, with large swelling extending from the purse about 18in. along the belly, and (2) horse lame on front foot. The joint above the knee is swollen, and there is a small hollow behind the shoulder.

Reply—(1) *Re* horse with swelling under belly. This is a condition of oedema, and due to feed, not accident. You should cut feed down, and either give an aloes ball (6 drams), or drench with a pound of Epsom salts. Subsequently feed only on light sloppy feed, with a handful of Epsom salts mixed in it night and morning. If green feed is available, it will materially help. Make a binder out of some old corn sacks, and stitch it around the body, so that it will hold tightly up against the swelling; a pad made of folded empty cornsacks placed over the swelling so as to act on it as a pressure pad. This will assist resorption of the swelling. (2) *Re* lame horse. Give complete rest to the animal; foment the swollen elbow joint frequently with hot fomenta. When tenderness has subsided, apply a good red blister to the swollen area. Feed on green feed, or light sloppy feed, with a handful of Epsom salts in, night and morning.

"B. C.," Yaninee, reports cow, calved a fortnight, had to be assisted in clearing afterbirth. Now very poor in condition, and weak.

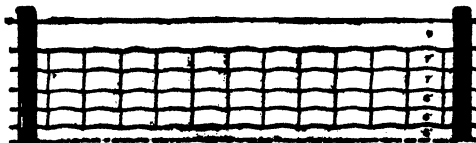
Reply—The cow is suffering from a septic metritis (septic inflammation of the breeding bag), due to retention of some portion of the foetal membranes. You should continue daily irrigations with hot salt solution, of strength one teaspoonful of common salt for each pint of water used. Use the solution as warm as you can comfortably bear your arm in, and be sure to inject it through a piece of rubber tubing passed through the neck of the breeding bag. Do not use force, but allow the fluid to run in by force of gravity. This daily irrigation should be continued until every sign of discharge ceases. If possible, get some of the following powders, each containing nux vomica 1 dram, powdered gentian root, 3 drams. Give one of these three times a day, mixed up with a spoonful of treacle, and placed on back of tongue so she has to lick it down. This is the best to use, but if possible to obtain, you may find some help by using instead 2oz. of ground ginger, given in the same way, or you can give a drench of a pint of black coffee, night and morning. Get some sweet ground bonemeal, and give 2oz. daily, mixed in the feed. Keep her strength up by tempting the appetite with different kinds of feed.

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THIRD REPORT ON THE TURRETFIELD DEMONSTRATION FARM.

APRIL 1st, 1923, TO MARCH 31st, 1924.

[By ARTHUR J. PERKINS, Director of Agriculture.]

The Turretfield Demonstration Farm has, since the 1st July, 1921, been run upon purely commercial lines, and reports concerning it have, in the main, been confined to balance-sheet considerations and an analysis of the cost of various farming operations.

The first nine months (1st July, 1921, to 31st March, 1922) closed with a net profit of £398 11s. 6d. (exclusive of estimated land tax and district council rates); and the second season (1st April, 1922, to 31st March, 1923) with a net profit of £483 15s. 9d. (exclusive of estimated land tax and district council rates).

Over and above this net profit, between 1st July, 1921, and 31st March, 1923, the farm paid into Government revenue, by way of rent and interest on capital account, the sum of £1,533 5s. 10d.

We have now to consider the results of the third season, i.e., from 1st April, 1923, to 31st March, 1924.

GENERAL SCHEME OF FARM OPERATIONS.

The farm consists approximately of 1,262 acres of arable land and 327 acres of rough grazing land; in addition, about 15 acres are occupied by buildings, plantations, &c.

The general scheme of farm operations has been described in detail in the first report (vide *Journal of Agriculture*, September, 1922), and may be summarised briefly as follows:—

The major portion of the arable land is worked on a three-course rotation, and the balance on a four-course rotation, aiming, roughly, at the following yearly treatment of the land:—

	Acres.
1. Bare fallow	450
2. Cereal hay or wheat	450
3. Second crop (barley or oats)	200
4. Grazing crops	162
Arable area	1,262

On the other hand, no rotation scheme can possibly be looked upon as binding for any and every season; special seasonal conditions must be taken into consideration, and, as is indicated below, their disturbing influence was considerable in the 1923-4 season, over the course of which arable land was distributed as follows:—

	Acres.
1. Bare fallow	480
2. Cereal hay and wheat	282.56
3. Second crop (barley or oats)	194.14
4. Grazing crops, &c.	305.3

Arable area 1,262

Unfortunately, abnormal winter conditions prevented us from bringing under crop a large proportion of the area specially prepared for the purpose.

A fat lamb flock and a herd of Middle York pigs form the main types of livestock associated with the farm crops. Livestock, according to the time of the year, is given access to both the arable and non-arable areas, and accounts concerned are debited or credited accordingly.

SEASONAL CHARACTERISTICS OF 1923-24.

The 1923-24 season was very abnormal for portion of the year, and resulted in unsatisfactory crop returns. The chief difficulties were connected with seeding operations, which eventually had to be abandoned in so far as portion of the land prepared for the purpose was concerned; moreover, the area actually seeded went in under unsatisfactory conditions. The main adverse factor was an abnormally wet winter following on a very dry autumn and late summer.

Details relative to the rainfall are indicated below in comparison with previously recorded means at Turretfield:—

TABLE 1.—*Showing 1923 Rainfall in Comparison with Previously Recorded Means (15 Years).*

	1923.	Means (15 Years.)
Late summer rains—		
January	0.46	0.59
February	nil	0.74
March	nil	0.96
	0.46	2.29
Seeding rains—		
April	0.12	0.81
May	5.98	2.49
	6.10	3.30

TABLE I.—*Showing 1923 Rainfall in Comparison with Previously Recorded Means (15 Years)*—continued.

	1923.	Means (15 Years).	
Winter rains—			
June	4.49	2.20	
July	3.27	2.11	4.31
Spring rains—			
August	2.37	2.09	
September	4.12	2.32	
October	1.47	1.65	6.06
Early summer rains—			
November	0.41	1.09	1.09
Total “useful” rain (April-Nov. inclusive)	22.23		14.76
Harvest rain—			
December	2.42	1.02	1.02
Total rainfall	25.11	18.07	

It will be observed in the first place that the total rainfall for 1923, 25.11in., was over 7in. above the normal mean, whilst the “useful” rain—April–November—*i.e.* rain falling during the growing period of cereal crops, 22.23in., was practically 7½in. in excess of the normal mean. Given satisfactory distribution over the growing period of crops, this excess should have led to unusually heavy yields; but, unfortunately, such was not the case.

Thus, apart from 46 points of rain registered in January and 12 points in April, the opening months of the year were rainless down to the 5th of May. From that date to 5th of August rain was almost continuous—70 rainy days out of 93—with a total fall of close on 15in. In the circumstances it will be realised that seeding operations took place under difficulties, that much land that had been prepared for seeding could not be brought under crop, and that what was sown suffered from unusually wet soil conditions.

Over the rest of the season the rainfall was more or less normal, except for heavy falls of rain towards mid-December, which hampered harvesting operations.

THE 1922-23 BALANCE-SHEET.

Notwithstanding the adverse weather conditions, the 1923-1924 season closed with a small profit of £216 5s. 11d. to the credit of the farm. This profit balance, which is smaller than the balances of the

two preceding seasons, is attributable solely to satisfactory returns from the farm flock, which compensated somewhat the heavy losses incurred on cropping operations.

Combined net profits (exclusive of land tax and district council rates, which are estimated at £50 13s. 8d. per annum) resulting from operations undertaken between 1st July, 1921, and 31st March, 1924, amount to £1,098 13s. 2d. Over and above these combined profits we have paid into revenue as interest the sum of £2,462 2s. 5d., inclusive of the debits shown on balance-sheet.

The total amount of Government funds engaged in the farm, inclusive of capital value of the land and floating capital, is represented by £17,590 18s. 2d. The gross earnings of the farm, inclusive of farm manager's salary and estimated land tax and district council rates, but exclusive of rent and interest, were represented in 1923-24 by £1,045 3s. 2d., or 5.94 per cent. on capital engaged. This was represented by 7.73 per cent. in 1921-22 and 7.68 per cent. in 1922-23. The mean gross earnings per annum between the 1st July, 1921, and 31st March, 1924, have therefore been represented by 7.06 per cent. per annum.

APPORTIONMENT OF RENT.

The total value of rent in these accounts has been estimated at 5 per cent. on the value of land and improvements, namely, £711 17s., and this sum, together with other charges, is paid annually into Government revenue. In the 1923-24 season rent has been distributed amongst various accounts on the following lines:—

	£	s.	d.
Sheep account	214	16	6
Bare fallow account	208	2	11
Working horses account	63	17	7
Wheat account	55	7	5
Barley account	54	12	0
Hay account	53	6	4
Cattle account	30	8	10
Mixed barley and oats account	19	19	11
Pigs account	10	5	0
Poultry account	1	0	6
	<hr/>		
	£711	17	0

In the apportionment of rent, bare fallow is usually debited with 'nine months' rent, and the cereal crops grown on bare fallow with an additional nine months, making 18 months in all debited against

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9. Makes a splendid firebreak, as it remains green and succulent right through the Summer.
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wheat or cereal hay grown on bare fallow. The remaining six months are distributed amongst the various livestock accounts. In the 1923-24 season 184 acres of bare fallow could not be seeded because of unprecedented winter rains. It follows, therefore, that out of the 480 acres of bare fallow available on 31st March, 1924, 184 acres had been tilled and borne no crop for 21 months. It did not seem fair to load this fallow with the full rental value, which would have to be borne by the 1924-25 crops, particularly as the cost of tillage operations would, in the circumstances, be considerably above normal. It was decided, therefore, to debit these 184 acres with 12 months' rent, and distribute the balance amongst the various 1923-24 accounts chiefly concerned.

APPORTIONMENT OF TAXES.

The farm does not pay land tax and district council rates. These have been estimated respectively at £22 10s. 10d. and £28 2s. 10d. These sums, which do not represent actual farm outgoings, have not been included in the balance-sheet. I propose, however, taking them into account in the discussion of individual accounts. In the season under consideration they have been distributed as follows among the various accounts:—

	£	s.	d.
Sheep account	15	6	0
Bare fallow account	14	16	1
Horses account	4	11	3
Wheat account	3	18	4
Barley account	3	18	3
Hay account	3	15	5
Cattle account	2	4	2
Mixed barley and oats account	1	8	6
Pig account	0	14	3
Poultry account	0	1	5
	£50	13	8

GENERAL EXPENSES ACCOUNT.

In any business, and particularly in farming, there are numerous items of expenditure which it is impossible to debit directly against any particular revenue-earning account. In the circumstances, such expenditure is gathered together under the heading of general expenses, and distributed at the end of the year amongst the various real accounts. The basis of this distribution is always a difficult question, and inevitably more or less arbitrary. Hence, it is always advisable to aim as much as possible at a low total for general expenses.

account. This total reached £545 19s. 9d. in 1922-23; for the current season we have been able to reduce it to £327 1s. 4d. from the following sources:—

	£	s.	d.
Wages	230	10	6
Depreciation	48	8	8
Horses	18	14	4
Tools and plant	8	18	4
Various	20	9	6
	<hr/>		
	£327	1	4

On a 1,604 acres farm this represents overhead expenses to the extent of about 4s. 1d. an acre.

In these accounts the basis adopted for the distribution of general expenses has been the total expenditure otherwise incurred under the several accounts, and in each case the debits have been made proportional to such expenditure. For the 1923-24 season distribution has been as follows:—

	£	s.	d.
Sheep account	105	2	6
Wheat account	72	9	3
Pigs account	47	17	5
•Wheaten hay account	43	15	0
Barley on stubble account	20	11	1
Cattle account	14	3	6
Oaten hay account	13	3	7
Barley and oats account	6	17	1
Barley on fallow account	3	1	11
	<hr/>		
	£327	1	4

APPORTIONMENT OF LOSS INCURRED FROM OUR INABILITY TO USE PORTION OF 1922-23 FALLOW.

As has already been stated, notwithstanding various efforts to bring it under crop, we were unable to utilise portion of 1922-23 fallows; eventually 184 acres had to be taken over on the 31st March, 1924, as two-year fallow. The handling of this area involved us in a dead loss of £698 10s. 5d., represented by tillage operations and attempts at seeding, plus 21 months' rent. It is possible that 1924-25 crops might benefit somewhat from the fact that the land had lain tilled and idle for a period of 21 months; and to that extent they might be expected to bear some portion of the additional expenditure incurred. At the same time, it is fairly obvious that the bulk of the expenditure must be borne by 1923-24 crops. Accordingly, the following arrangement has been adopted.

In the first place the 184 acres have been taken over loaded with 12 months' rent, instead of nine months, as is customary with normal fallow; this accounts for £94 6s. 8d. An additional amount of £180 1s. 2d., or 19s. 7d. an acre, represents general tillage operations incurred during the 21 months. This leaves us with a balance of £424 2s. 7d., which has been debited against 1923-24 crops grown on bare fallow as follows:—

	£	s.	d.
Wheat (for grain) account	254	12	10
Wheaten hay account	146	12	0
Barley	22	17	9
	<hr/>		
	£424	2	7

HAY ACCOUNT.

A discussion of the 1923-24 hay account involves difficulties that did not arise in more normal years. There is the difficulty that efforts to sow much of the land prepared for hay were unsuccessful; the difficulty that portion of this area was eventually sown to barley and portion abandoned; the difficulty that second crop usually reaped for grain was cut for hay, &c. All these difficulties serve to complicate the hay account very considerably, and will afford an excellent illustration of the financial difficulties which farmers have to face in adverse seasons.

The total area actually sown and harvested as hay was represented by 138.48 acres, from which we gathered in 210 tons 9cwt. 56lbs. of hay, or 1 ton 10cwt. 44lbs. per acre. Of this area only 82.95 acres represented wheaten hay grown on bare fallow, yielding 107 tons 16cwt. 84lbs., or 1 ton 6cwt. per acre; the balance, 55.53 acres, was represented by oaten hay, grown as a stubble crop, yielding 102 tons 12cwt. 84lbs., or 1 ton 16cwt. 107lbs. per acre. We have here the anomaly of wheaten hay grown on bare fallow showing a heavy loss, redeemed somewhat by a handsome profit from oaten hay grown on stubble land.

The profit and loss account shows the combined hay account to stand at a loss of £61 5s., or 8s. 10d. an acre; if further consideration is taken of proportional rates and taxes, this loss is increased to £65 0s. 5d., or 9s. 5d. per acre. It should be observed that in these figures is included proportional loss on unused fallows, namely, £146 12s. Were it not for this, the hay account would have shown a profit of £85 7s., or 12s. 3.9d. an acre.

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The general position of the 1923-24 hay account relatively to that of preceding seasons is shown below:—

TABLE II.—*Showing Position of 1923-24 Hay Account Relatively to that of Two Preceding Seasons.*

Seasons.	Area under	Mean Yield.			Price.			Profit or Loss.			
	Hay.	Per Acre.			Per Ton.			Per Acre.			
	Acres.	T.	C.	L.							
1921-22	280.97	2	16	0	£1	15	0	+	20	15	4
1922-23	225.93	2	3	35	3	0	0	+	2	10	4
1923-24	138.48	1	10	44	2	11	9	—	0	9	5

NOTE.—In the above table "Profit" is preceded by sign + and "Loss" by sign —.

I propose next analysing expenditure incurred in growing (a) wheaten hay on bare fallow and (b) oaten hay on stubble land.

Details of expenditure have been analysed below on the lines adopted in the preceding season.

TABLE III.—*Analysis of Expenditure 1923-24 Wheaten Hay on Bare Fallow.*

	Total Expenditure.			Expenditure. Per Acre.			Expenditure. Per Ton.		
	£ s. d.	£ s. d.	£ s. d.	s. d.	£ s. d.	s. d.	£ s. d.	£ s. d.	
1922-23 fallows—									
Tillage operations	49 10 6			11 11.3	—	9 2.2	—		
Rent	37 9 4			9 0.4	—	6 11.4	—		
		86 19 10			1 0 11		0 16 1.6		
Seeding operations—									
Ploughing	2 12 7								
Cultivating	6 1 2								
Harrowing	5 0 0								
		13 13 9		3 3.6	—	2 6.5	—		
Clearing stones	—	1 8 7		0 4.1	—	0 3.2	—		
Drilling super	9 8 5								
(49.89 acres)									
Marking out	0 7 7								
Broadcasting seed	1 15 11								
		11 11 11		4 7.8	—	3 6.9	—		
Drilling super and seed	—	7 3 8							
(33.06 acres)									
		18 15 7		4 4.1	—	3 4.1	—		
		18 15 7		4 6.3	—	3 5.8	—		
Super	33 6 5			8 0.4	—	6 2.2	—		
Seed	35 13 3			8 7.9	—	6 7.9	—		
Total seeding	—	108 2 7		1 4 10.4	—	0 19 1.4			
Spring tillage—									
Horse hoeing	0 3 2								
Rolling	0 8 2								
		0 11 4		0 1.6	—	0 0 1.3			
Harvesting operations—									
Binding	27 6 8			6 7.1	—	5 0.8	—		
Stooking	7 19 8			1 11.1	—	1 5.7	—		
Carting and stacking	32 0 9			14 8.9*	—	11 4.1*	—		
Binder twine	8 13 3			2 1	—	1 7.3	—		
		76 0 4		0 18 3.9	—	0 14 1.1			

TABLE III. *Analysis of Expenditure 1923-24 Wheaten Hay on Bare Fallow*—continued.

	Total Expenditure.						Expenditure. Per Acre.						Expenditure. Per Ton.					
Incidental -	£	s.	d.	£	s.	d.	s.	d.	£	s.	d.	s.	d.	£	s.	d.		
General.. . . .	43	15	0	—	—	—	10	6.6	—	—	—	8	1.4	—	—	—		
Insurance	0	15	5	—	—	—	0	2.2	—	—	—	0	1.7	—	—	—		
Rates and taxes	2	5	7	—	—	—	0	6.6	—	—	—	0	5.1	—	—	—		
	<hr/>			46	16	0	<hr/>			0	11	3.4	<hr/>			0	8	8.2
Rent.. . . .	—	—	—	31	18	3	—	—	—	7	8.3	—	—	—	0	5	11	
	<hr/>			<hr/>			<hr/>			<hr/>			<hr/>			<hr/>		
Total	—	—	—	£345	8	4	—	—	£4	3	3.3	—	—	£3	4	0.7		
Proportional loss on unused fallows				146	12	0	—	—	1	15	4.2	—	—	1	7	2.3		
	<hr/>			<hr/>			<hr/>			<hr/>			<hr/>			<hr/>		
Total costs				£492	0	4				£5	18	7.5				£4	11	3

* These two figures for carting and stacking hay, namely, 14s. 8.9d. per acre and 11s. 4.1d. per ton, have been calculated from 43.47 acres and 56½ tons respectively. The balance of the hay was sold in the stook; relatively to the total area harvested the figures are 7s. 8.7d. per acre and 5s. 11.3d. per ton, which figures appear in the totals representing total harvesting expenditure.

An examination of figures given in Table III. show that if we overlook the fact that portion of the area intended for hay was not harvested, expenditure incurred was more or less normal relatively to the experience of preceding seasons. This fact is emphasised in Table IV.

TABLE IV.—*Comparison of Cost of Growing Wheaten Hay on Bare Fallow in Three Seasons.*

	Expenditure per Acre.			Expenditure per Ton.		
	1923-24. £ s. d.	1922-23. £ s. d.	1921-22. £ s. d.	1923-24. £ s. d.	1922-23. £ s. d.	1921-22. £ s. d.
Tillage of fallows	0 11 11.3	0 9 3.6	—	0 9 2.2	0 4 3.5	} 0 8 11.2
Seeding operations	1 4 10.4	1 6 3.5	1 5 0	0 19 1.4	0 12 1.8	
Spring tillage	0 0 1.6	0 0 5.8	nil	0 0 1.3	0 0 2.7	
Harvesting operations	0 18 3.9	1 2 10.8	1 11 3	0 14 1.1	0 10 6.9	0 11 1.8
Incidentals	0 11 3.4	0 12 4.5	0 13 2	0 8 8.2	0 5 8.3	0 4 8.5
Rent (18 months)	0 16 8.7	0 16 7.5	0 16 4	0 12 10.4	0 7 8.2	0 5 10.1
	<hr/>			<hr/>		
Totals	4 3 3.3	4 8 0	4 5 9	3 4 0.7	2 0 7	1 10 8
Add loss on unused fallows	1 15 4.2	nil	nil	1 7 2.3	nil	nil
	<hr/>			<hr/>		
Totals	5 18 7.5	4 8 0	4 5 9	4 11 3	2 0 7	1 10 8

Hence, apart from loss incurred on unused fallows, the cost per acre was less in 1923-24 than in the two preceding seasons. Reduced expenditure in this direction is attributable chiefly to lower harvesting expenditure, resulting from the sale in the stook of approximately 148 tons, which was neither carted nor stacked. On the other hand, if account be taken of loss incurred on unused fallows, the cost per acre in 1923-24 rises to £5 18s. 7½d., which involves a heavy loss for the year.

TABLE V.—*Analyses of Items of Expenditure Incurred, Etc.*—continued.

	EXPENDITURE PER TON.										Total, 1922-23.	Means.			
	Labor.		Horses, Implements.		Total.		Total, 1922-23.								
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.					
Tillage of fallows	2	1	5	10.2	1	3.0	9	2.2	4	3.5	6	8.85			
Seeding operations	1	8.8	3	5.5	1	1.0	6	3.3	3	5.6	4	10.45			
Spring tillage	0	0.5	0	0.4	0	0.4	0	1.3	0	2.6	0	1.95			
Harvest operations	6	5.5	3	0.6	2	11.7	12	5.8	9	3.8	10	10.8			
Super	—	—	—	—	—	—	6	2.2	4	7.6	5	4.9			
Seed	—	—	—	—	—	—	6	7.9	4	0.5	5	4.2			
Twine	—	—	—	—	—	—	1	7.3	1	3.1	1	5.2			
General	—	—	—	—	—	—	8	1.4	4	10.5	6	5.95			
Taxes	—	—	—	—	—	—	0	5.1	0	3.9	0	4.5			
Insurance in field	—	—	—	—	—	—	0	1.7	0	5.9	0	3.8			
Rent (18 months)	—	—	—	—	—	—	12	10.4	7	8.1	10	3.25			
<hr/>															
Totals	10	3.8	12	4.7	5	4.1	£3	4	0.7	£2	0	7	£2	12	3.85
<hr/>															
1922-23 totals	7	4.1	7	0.8	2	10.6									
Means	8	9.95	9	8.75	4	1.35									

It will be noted from the above table that over two seasons—one favorable and the other unfavorable—the mean cost per acre of growing and harvesting wheaten hay sown on bare fallow has been £4 5s. 8d., and the mean cost per ton £2 12s. 4d. In this expenditure, £1 17s. per acre, or 43.15 per cent. of total expenditure, is taken up by labor, use of horses, and wear and tear of implements; the balance, £2 8s. 8d., includes rent 16s. 8d., purchased articles, such as super, seed, and twine, £1 0s. 2d., and incidentals 11s. 10d.

From another point of view, and in round figures, 43 per cent. of the cost of growing hay is absorbed by labor, horses, and implements. 24 per cent. by purchased or saleable commodities, 20 per cent. by rent, and 13 per cent. by incidentals.

OATEN HAY AS A SECOND CROP OFF STUBBLE LAND.

Owing to the partial failure of the fallow crops, 55.53 acres of oats sown on stubble land were cut for hay, and yielded 102 tons 12cwts. 84lbs., or 1 ton 16cwts. 107lbs. per acre.

Total receipts under this heading amounted to £296 1s. 10d., and total expenditure incurred to £150 5s., leaving a net profit of £145 16s. 10d., or £2 12s. 6d. an acre. If from this profit we deduct proportional rates and taxes, we have a net profit of £2 12s. an acre.

The profits realised from stubble hay, although not sufficient to compensate heavy losses on bare fallow hay, went a long way towards it.

The lesson taught by the 1923-24 season would appear to be that in similar circumstances it would pay to leave the fallows alone and concentrate all energies on stubble crops.

Expenditure incurred for oaten hay grown on stubble is analysed in the tables that follow:—

TABLE VI.—*General Statement of Expenditure incurred for Oaten Hay Grown on Stubble Land.*

	Total Expenditure. 55.53 acres.			Expenditure. Per acre.		Expenditure. Per ton.			
	£	s.	d.	£	s.	d.	s.	d.	
Preparation of land—									
Burning off stubble	1	0	3	—	0	4.4	—	0	2.4
Ploughing	2	15	3	—	0	11.9	—	0	6.5
Cultivating	19	0	3	—	4	8.2	—	2	6.4
Harrowing	3	19	11	—	1	5.3	—	0	9.2
Clearing stumps ..	0	4	0	—	0	0.9	—	0	0.5
	20 19 8			7 6.7		4 1			
Seeding operations—									
Drilling super and seed	12	8	5	—	4	5.7	—	2	5
Super	10	19	11	—	3	11.5	—	2	1.7
Seed	19	17	5	—	7	1.9	—	3	10.5
	43 5 9			15 7.1		8 5.2			
Spring tillage—									
Rolling	1	10	5	—	0	6.6	—	0	3.6
Harrowing	1	19	10	—	0	8.5	—	0	4.6
Weeding	0	1	7	—	0	0.4	—	0	0.2
	3 11 10			1 3.5		0 8.4			
Harvesting operations—									
Binding	20	9	5	—	7	4.5	—	3	11.9
Stooking	10	18	5	—	3	11.2	—	2	1.5
Carting and stacking	6	12	5	—	*22	9.9	—	*12	3.8
Binder twine .. .	8	4	11	—	2	11.6	—	1	7.3
	46 5 2			16 7.9		9 0.2			
Incidentals—									
General	13	3	7	—	4	9	—	2	6.8
Insurance in field	1	10	11	—	0	6.7	—	0	3.6
Rates and taxes ..	1	9	10	—	0	6.4	—	0	3.5
	16 4 4			5 10.1		3 1.9			
Rent	21	8	1	—	7	8.5	—	4	2.1
Totals	£151 14 10			£2 14 7.8		£1 9 6.8			

* 22s. 9.9d. per acre and 12s. 3.8d. per ton represent expenditure actually incurred on 10½ tons from 5.8 acres actually carted and stacked. The balance of the hay was sold in the stook. For purposes of establishing total expenditure actually incurred the figures 2s. 4.6d. per acre and 1s. 3.5d. per ton are used in the table.

TABLE VII.—*Analysis of Expenditure incurred for Oaten Hay Grown on Stubble Land—Expenditure on 55.53 Acres.*

TOTAL EXPENDITURE.													
	Labor.			Horses.			Implements.			Total.			Percentage.
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	
Preparation of land	6	7	1	12	17	1	1	15	6	20	19	8	13.8
Seeding operations	2	12	10	5	8	7	4	7	0	12	8	5	8.2
Spring tillage	1	1	8	1	14	4	0	15	10	3	11	10	2.4
Harvesting operations	20	0	4	6	7	6	11	12	5	38	0	3	25.1
Super	—	—	—	—	—	—	—	—	—	10	19	11	7.2
Seed	—	—	—	—	—	—	—	—	—	19	17	5	13.1
Twine	—	—	—	—	—	—	—	—	—	8	4	11	5.5
General	—	—	—	—	—	—	—	—	—	13	3	7	8.7
Taxes	—	—	—	—	—	—	—	—	—	1	9	10	0.9
Insurance in field	—	—	—	—	—	—	—	—	—	1	10	11	1.0
Rent	—	—	—	—	—	—	—	—	—	21	8	1	14.1
Total	£30	1	11	£26	7	6	£18	10	9	£151	14	10	100
Percentage	19.9			17.4			12.2						

EXPENDITURE PER ACRE.

	Labor.			Horses.			Implements.			Total.		
	s.	d.		s.	d.		s.	d.		s.	d.	
Preparation of land	2	3.4		4	7.6		0	7.7		7	6.7	
Seeding operations	0	11.4		1	11.5		1	6.8		4	5.7	
Spring tillage	0	4.7		0	7.4		0	3.4		1	3.5	
Harvesting operations	7	2.5		2	3.6		4	2.2		13	8.3	
Super	—	—		—	—		—	—		3	11.5	
Seed	—	—		—	—		—	—		7	1.9	
Twine	—	—		—	—		—	—		2	11.6	
General	—	—		—	—		—	—		4	9	
Taxes	—	—		—	—		—	—		0	6.4	
Insurance in field	—	—		—	—		—	—		0	6.7	
Rent	—	—		—	—		—	—		7	8.5	
Totals	10	19		9	6.1		6	3.1		£2	14	7.8

EXPENDITURE PER TON.

	Labor.			Horses.			Implements.			Total.		
	s.	d.		s.	d.		s.	d.		s.	d.	
Preparation of land	1	2.9		2	6.1		0	4		4	1	
Seeding operations	0	6.2		1	0.7		0	10.1		2	5	
Spring tillage	0	2.5		0	4		0	1.9		0	8.4	
Harvesting operations	3	10.8		1	2.9		2	3.2		7	4.9	
Super	—	—		—	—		—	—		2	1.7	
Seed	—	—		—	—		—	—		3	10.5	
Twine	—	—		—	—		—	—		1	7.3	
General	—	—		—	—		—	—		2	6.8	
Taxes	—	—		—	—		—	—		0	3.5	
Insurance in field	—	—		—	—		—	—		0	3.6	
Rent	—	—		—	—		—	—		4	2.1	
Totals	5	10.4		5	1.7		3	7.2		£1	9	6.8

From the above tables we may see that oaten hay grown on stubble land and yielding 1 ton 16cwts. 107lbs. to the acre involved us in an expenditure of £2 14s. 8d. an acre. Of this hay only 10½ tons was

carted and stacked at a cost of £6 12s. 5d., whilst the balance was sold in the stook. If, however, for purposes of comparison, we assume all the hay to have been carted and stacked, the mean cost per acre works out at £3 15s. 1.1d., and the mean cost per ton at £2 0s. 7.1d. Corresponding mean figures (1922-23 and 1923-24) for wheaten on bare fallow are £4 9s. 2d. per acre and £2 15s. per ton, *i.e.*, hay grown on bare fallow cost 15s. a ton more to grow than hay raised on stubble ground. The main difference arises from double rent and more costly tillage operations in the case of hay grown on bare fallow. Normally one should expect an increased yield calculated to neutralise this difference. Unfortunately such was not the case in 1923-24.

WHEAT ACCOUNT.

In the district surrounding Turretfield it is generally recognised that in ordinary seasons haygrowing is a better paying proposition than wheatgrowing; and normally the Demonstration Farm makes no special effort to grow wheat for grain. Nevertheless, each year the crops that appear least promising as hay are reaped for grain to meet farm seed and livestock requirements. Any available balance is marketed as ordinary wheat. Mean yields have therefore never been very high: 13.2 bush. in 1921-22 and 15.08bush. in 1922-23. Unfortunately, in 1923-24, if crops sown on bare fallow were unsatisfactory as hay crops, they were equally unsatisfactory as grain crops. From 144.08 acres our mean average per acre was 9.93bush., and like the hay account, the wheat account closes at a loss.

The actual loss on crops harvested is represented by £302 17s. 5d., or £2 2s. 0.5d. per acre. When, however, we take into account a proportional loss on unused fallows, the loss on the wheat account is raised to £557 10s. 3d., or £3 17s. 5d. an acre.

In this connection it should be stated that all 1923-24 wheat was passed into stores account as soon as harvesting operations had been completed on 5th February, 1924, at the local ruling rate for f.a.q. wheat, less 10 per cent., namely, 3s. 7½d. per bushel. Wheat has since risen in price, and any profit as the result of sales will figure in the stores account, which is treated as a sort of suspense account, to which all saleable commodities are transferred, pending sales. We are compelled to adopt this practice in order to permit of an annual closing of all real accounts, independently of possible future market fluctuations. For the purpose of crop accounts, we accept ruling rates at harvesting time; profits or losses arising from speculative market fluctuations are reserved for the stores account, which is our trading account.

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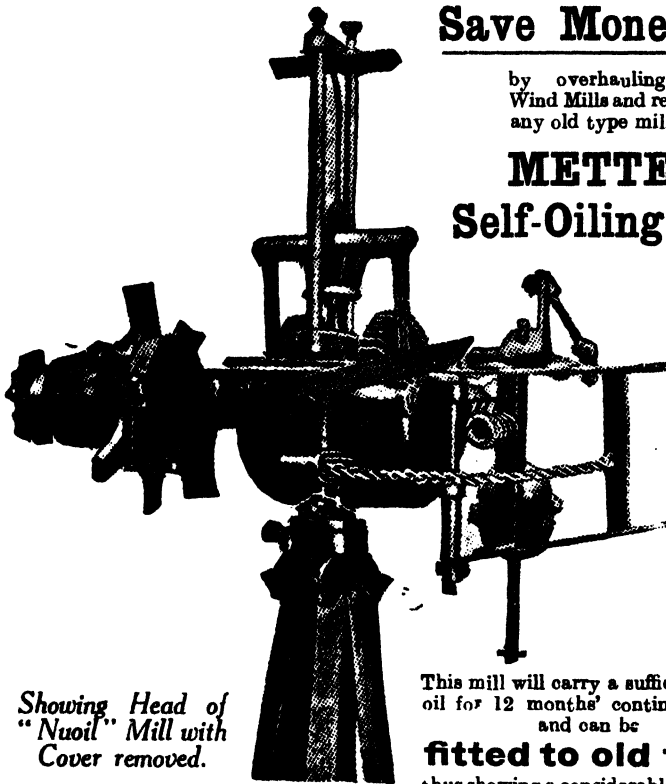
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The 1923-24 wheat is still unsold (1st August, 1924), and could be marketed at 5s. 6d. a bushel. If this were done, the loss on the wheat account would be reduced to £421 10s. 11d., or £2 18s. 62d. per acre.

Expenditure connected with the growing of wheat on bare fallow has been analysed in the accompanying tables:—

TABLE VIII.—*General Statement of 1923-24 Expenditure incurred for Wheat Grown on Bare Fallow.*

	Total Expenditure on 144.08 acres.			Expenditure. Per acre.			Expenditure. Per bushel.		
	£	s.	d.	£	s.	d.	£	s.	d.
1922-23 fallow—									
Tillage operations	87	12	8			12 2	—	1 2.7	—
Rent	65	1	7			9 0.4	—	0 10.9	—
	<hr/>			<hr/>			<hr/>		
	152 14 3			1 1 2.4			2 1.6		
	(27.1 p. cent.)								
Seeding operations—									
Clearing stones	1	11	2						
Ploughing	12	10	5						
Cultivating	17	6	0						
Harrowing	11	7	0						
	<hr/>			<hr/>			<hr/>		
	42 14 7			5 11.2			0 7.2		
Drilling super									
(88.46 acres)	19	1	5						
Marking out	0	14	9						
Broadcasting	3	15	7						
	<hr/>			<hr/>			<hr/>		
	23 11 9			5 4			0 6.4		
Drilling super and seed									
(55.62 acres)	13	11	7			4 10.6	—	0 5.9	—
	<hr/>			<hr/>			<hr/>		
	37 3 4			5 1.9			0 6.2		
super	58	4	11			8 1	—	0 9.8	—
Seed	69	4	9			9 7.3	—	0 11.6	—
	<hr/>			<hr/>			<hr/>		
	207 7 7			1 8 9.4			2 10.8		
	(36.8 p. cent.)								
Spring tillage—									
Horse hoeing	0	8	7						
	<hr/>			<hr/>			<hr/>		
	0 11 6			0 0 1.3			0 0.1		
	<hr/>			<hr/>			<hr/>		
	0 15 1			0 0 1.3			0 0.1		
Harvesting operations—									
Reaping	55	15	6			7 8.9	—	0 9.4	—
Sewing bags	1	17	1			0 3.1	—	0 0.3	—
Carting to farm	7	8	5			1 0	—	0 1.2	—
Bags	6	9	11			0 10.8	—	0 1.0	—
Twine	0	10	6			0 0.9	—	0 0.1	—
	<hr/>			<hr/>			<hr/>		
	71 16 5			0 9 11.7			1 0		
	(12.6 p.c.)								
Incidentals—									
General	72	9	3						
Rates and taxes	8	18	4						
	<hr/>			<hr/>			<hr/>		
	76 7 7			0 10 7.2			1 0.8		
	(13.6 p.c.)								
Rent	55	7	5			0 7 8.2	—	0 9.3	—
	<hr/>			<hr/>			<hr/>		
	55 7 5			0 7 8.2			0 9.3		
	(9.9 p.c.)								
Totals£564 8 4									
Proportional loss on unused fallow.	254 12 10			1 15 4.2			3 6.7		
Totals£819 1 2									
£8 18 4.2									
£11 5.3									

TABLE IX.—*Analysis of Expenditure incurred in 1923-24 for Wheat Grown on Bare Fallow, exclusive of Proportional Loss from*

Unused Fallows.	TOTAL EXPENDITURE.									Percentage.			Mean.		
	Labor.			Horses.			Implements.			Total.				1923-24.	22-23.
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.		P. cent.	P. cent.
Tillage of fallows	19	17	4	55	16	4	11	19	0	87	12	8	15.5	18.0	16.75
Seeding operations	21	0	10	45	8	9	13	8	4	79	17	11	14.2	6.8	10.50
Spring tillage.. . .	0	4	7	0	6	0	0	4	6	0	15	1	0.1	0.3	0.20
Harvesting operations	22	10	9	22	3	8	20	1	7	64	16	0	11.5	11.0	11.25
Super	—	—	—	—	—	—	—	—	—	58	4	11	10.3	13.9	12.10
Seed	—	—	—	—	—	—	—	—	—	69	4	9	12.3	10.0	11.15
Bags	—	—	—	—	—	—	—	—	—	6	9	11	1.2	4.8	3.00
Sewing twine	—	—	—	—	—	—	—	—	—	0	10	6	0.1	0.1	0.10
General	—	—	—	—	—	—	—	—	—	72	9	3	12.8	12.6	12.70
Rates and taxes . .	—	—	—	—	—	—	—	—	—	3	18	4	0.7	0.9	0.80
Rent (18 months)	—	—	—	—	—	—	—	—	—	120	9	0	21.3	21.6	21.45
Totals.	£63	13	6	£123	14	9	£45	13	5	564	8	4	100	100	100
Percentage	11.3			21.9			8.1								
1922-23 percentage	12.0			16.5			7.6								
Means	11.65			19.2			7.85								

EXPENDITURE PER ACRE.

	Labor.		Horses.		Implements.		Total.		Total.		Means.	
							1923-24.		1922-23.			
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Tillage of fallows ..	2	9.1	7	9	1	7.9	12	2	13	11.5	13	0.75
Seeding operations. . .	2	11	6	3.7	1	10.4	11	1.1	5	2.8	8	1.95
Spring tillage.	0	0.5	0	0.4	0	0.4	0	1.3	0	3.2	0	2.25
Harvesting operations	3	1.5	3	1	2	9.5	9	0	8	6.4	8	9.20
Super.	—	—	—	—	—	—	8	1	10	9.6	9	5.30
Seed	—	—	—	—	—	—	9	7.3	7	9.2	8	8.25
Bags	—	—	—	—	—	—	0	10.8	3	8.4	2	3.60
Sewing twine	—	—	—	—	—	—	0	0.9	0	1.4	0	1.15
General	—	—	—	—	—	—	10	0.7	9	8.9	9	10.80
Rates and taxes	—	—	—	—	—	—	0	6.5	0	8.6	0	7.55
Rent (18 months) . . .	—	—	—	—	—	—	16	8.6	16	9	16	8.80
<hr/>												
Totals	8	10.1	17	2.1	6	4.2	£3	18	4.2	£3	17	11.6
1922-23 totals	9	3.5	12	10	5	10.3						
Means	9	0.8	15	0	6	1.2						

EXPENDITURE PER BUSHEL.

	Labor.		Horses.		Implements.		Totals.		Totals.		Means.	
	s. d.		s. d.		s. d.		1923-24.		22-23.		s. d.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Tillage of fallows.. . . .	0	3.3	0	9.4	0	2	1	2.7	0	11.1	1	0.90
Seeding operations.. . . .	0	3.5	0	7.6	0	2.3	1	1.4	0	4.2	0	8.80
Spring tillage.. . . .	0	0.03	0	0.04	0	0.03	0	0.1	—	—	0	0.05
Harvesting operations.. . .	0	3.8	0	3.7	0	3.4	0	10.9	0	6.8	0	8.85
Super.. . . .	—	—	—	—	—	—	0	9.8	0	8.6	0	9.20
Seed	—	—	—	—	—	—	0	11.6	0	6.2	0	8.90
Bags	—	—	—	—	—	—	0	1.0	0	2.9	0	1.95
Sewing twine	—	—	—	—	—	—	0	0.1	0	0.1	0	0.10
General	—	—	—	—	—	—	1	0.2	0	7.8	0	10.00
Rates and taxes.. . . .	—	—	—	—	—	—	0	0.6	0	0.6	0	0.60
Rent	—	—	—	—	—	—	1	8.2	1	1.3	1	4.75
<hr/>												
Totals.. . . .	0	10.63	1	8.74	0	7.73	7	10.6	5	1.6	6	6.1
1922-23 total.. . . .	0	7.3	0	10.2	0	4.6						
Means	0	8.96	1	3.47	0	6.16						

In considering expenditure incurred it may be noted that cost per acre in 1923-24 was 9.2d. in excess of that incurred in 1922-23, although in the first case the yield per acre was only 9.93bush. and in the second 15.08bush. to the acre. This is accounted for by difficult seeding conditions, involving us in an expenditure of 11s. 1d. an acre in 1923-24, against 5s. 3d. in 1922-23. Taking the mean of the two seasons, the cost of growing wheat may be summarised in round figures as follows:—

	Cost per Acre.			Per Cent.
	£	s.	d.	
Preparation of fallows to 31st March . . .	0	13	0	16.7
Seeding operations (including tillage) . .	1	6	0	33.3
Harvest operations	0	11	0	14.1
Incidental expenditure	0	11	0	14.1
Rent (18 months)	0	17	0	21.8
	<hr/> £3 18 0			<hr/> 100.0

If on the above basis we assume the cost of growing wheat in the Turretfield district, and those similarly situated, to be represented by £3 18s. an acre, it would take 15½bush. at 5s. and 19½bush. at 4s. to balance costs of production. These yields—15½bush. and 19½bush. respectively—would remunerate the farmer to the extent of yielding him standard wages for his labor, but would leave him no net profit over and above wages, notwithstanding the fact that in his efforts to grow wheat he will have been compelled to engage important sums by way of fixed and floating capital, and frequently to jeopardise his personal credit. Lower yields, on the other hand, would place him at a distinct disadvantage relative to other wage earners.

The extent to which labor enters into the production of wheat will be made clear in the following summary, which will be found to correspond with the one already given above:—

	Expenditure per Acre.			Percentage.
	£	s.	d.	
Labor	0	9	0	12
Use of horses	0	15	0	19
Use of implements	0	6	0	8
Seed	0	8	0	11
Purchase of essential material . . .	0	12	0	15
Incidental	0	11	0	14
Rent (18 months)	0	17	0	21
	<hr/> £3 18 0			<hr/> 100

The above table shows that in the total expenditure per acre involved in wheatgrowing, actual field labor does not absorb more than 12 per cent. of total costs, or 9s. per acre. This sum does not, however, cover the cost of all labor concerned in wheatgrowing, both directly and indirectly. Thus, costs of incidentals, use of horses, and use of implements all include expenditure incurred as labor. Hence, value of total labor, both direct and indirect, involved in the growing and harvesting of wheat may be summarised as follows:—

	Per Acre.		
	£	s.	d.
Actual field labor	0	9	0
Labor included in incidentals	0	7	0
Labor included under horses	0	1	9
Labor included under implements	0	1	3

Cost of total labor absorbed in raising and
harvesting one acre of wheat £0 19 0

Hence, if we assume a farmer to have 300 acres under wheat, the gross returns from which only just balance expenditure incurred (*e.g.*, 15½bush. at 5s., or 19½bush. at 4s.) the net wages earned by himself and family would not be in excess of £285. This fact alone should suffice to show how essential it is to combine with wheatgrowing other rural operations, the most profitable of which in present circumstances are those connected with livestock, and chiefly sheep.

Finally, it will be noted that at Turretfield the mean cost of growing wheat over two seasons has been 6s. 6d. a bushel. This high cost of production is probably not a fair statement of the position from the point of view of the district. If wheatgrowing instead of haygrowing were our main objective it is certain that costs of production per bushel could be considerably reduced; that is to say, mean yields per acre would be heavier, whilst expenditure would probably vary but little.

BARLEY ACCOUNT.

Like our other winter-sown crops, barley was more or less a failure in 1923-24. The account closed with a loss of £131 2s. 8d., or 18s. 5d. an acre. Normally barley is sown at Turretfield on stubble land alone; in 1923-24 the difficulties of the season compelled us to sow some barley on bare fallow. Of this 12.95 acres yielded 19bush. 35lbs. to the acre, with a loss of £2 12s. 3d. an acre, or if we add proportional

loss on unused fallows, £4 7s. 7d. an acre. As the sowing of barley on the fallows was purely accidental, I do not propose discussing the account in detail.

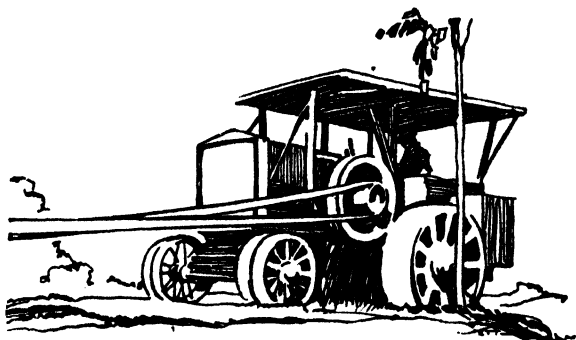
On the other hand, 129.19 acres of stubble land yielded barley at the rate of 13bush. 5lbs. to the acre. The account closed at a loss of 12s. 0.9d. an acre, inclusive of proportional rates and taxes. The barley was taken into stores at 1s. 11½d. per bushel, which at the time represented local value less 10 per cent.

Details of expenditure incurred may be summarised as follows:—

TABLE X.—*General Statement of Expenditure Incurred for 129.19 Acres of Barley on Stubble Land.*

	Total.			Per Acre.		Per Bushel.								
	£	s.	d.	£	s.	d.	s.	d.	P. cent.					
Preparation of land—														
Burning of stubble	0	11	0	—	0	1.1	—	0	0.1	—				
Ploughing	60	19	1	—	9	5.2	—	0	8.6	—				
	<hr/>			61	10	1	<hr/>	9	6.3	<hr/>	0	8.7	25.3	
Seeding operations—														
Drilling	16	15	11	—	2	7.2	—	0	2.3	—	—	—	—	
Super	20	18	1	—	3	2.8	—	0	3	—	—	—	—	
Seed	16	7	1	—	2	6.4	—	0	2.3	—	—	—	—	
	<hr/>			54	1	1	<hr/>	8	4.4	<hr/>	0	7.6	22.2	
Spring tillage—														
Harrowing	5	6	3	—	0	9.9	—	0	0.8	—	—	—	—	
Rolling	3	12	5	—	0	0.7	—	0	0.5	—	—	—	—	
	<hr/>			8	18	8	<hr/>	1	4.6	<hr/>	0	1.3	3.7	
Harvesting operations—														
Reaping	30	9	11	—	4	8.7	—	0	4.3	—	—	—	—	
Bags	2	16	1	—	0	5.2	—	0	0.4	—	—	—	—	
Sewing twine	0	12	1	—	0	1.1	—	0	0.1	—	—	—	—	
Sewing bags	2	5	10	—	0	4.3	—	0	0.3	—	—	—	—	
Carting to barn	8	17	0	—	1	4.4	—	0	1.3	—	—	—	—	
	<hr/>			45	0	11	<hr/>	6	11.7	<hr/>	0	6.4	18.5	
Incidentals—														
General	20	11	1	—	3	2.2	—	0	2.9	—	—	—	—	
Rates and taxes	3	11	2	—	0	6.6	—	0	0.5	—	—	—	—	
	<hr/>			24	2	3	<hr/>	3	8.8	<hr/>	0	3.4	9.9	
Rent (9 months)	—	49	12	0	—	—	—	7	8.1	—	0	7	20.4	
Totals	<hr/>			£243	5	0	<hr/>	1	17	7.9	—	2	10.4	100

The mean cost per acre—£1 17s. 8d.—was lower than in 1922-23—£2 1s. 7d.—as also was the cost per bushel, 2s. 10.4d. as against 3s. 3d., in each season respectively for crops of approximately corresponding yields.



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TABLE XI.—*Analysis of 1923-24 Expenditure Incurred for Barley Grown on Stubble Land—continued.*

	EXPENDITURE PER BUSHEL.				1922-23.		Means.
	Labor.	Horses.	Implements.	Total.			
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Preparation of land	0 2	0 6.2	0 0.5	0 8.7	0 6.9	0 7.80	
Seeding operations	0 0.6	0 0.7	0 1.0	0 2.3	0 3.1	0 2.70	
Spring tillage	0 0.4	0 0.7	0 0.2	0 1.3	nil	0 0.65	
Harvesting operations	0 1.7	0 2.3	0 1.9	0 5.9	0 5.9	0 5.90	
Super	—	—	—	0 3.0	0 5.7	0 4.35	
Seed	—	—	—	0 2.3	0 2.3	0 2.30	
Bags	—	—	—	0 0.4	0 1.1	0 0.75	
Sewing twine	—	—	—	0 0.1	—	0 0.05	
General	—	—	—	0 2.9	0 4.8	0 3.85	
Rates and taxes	—	—	—	0 0.5	0 0.7	0 0.60	
Rent (9 months)	—	—	—	0 7.0	0 8.5	0 7.75	
Totals	6 4.7	0 9.9	6 3.6	2 10.4	3 3	3 0.7	
1922-23	0 4.5	0 8.2	0 3.2				
Means	0 4.6	0 9.05	0 3.4				

In summary, therefore, at Turretfield, over two seasons, barley grown on stubble land and yielding 12bush. to 14bush. to the acre, has cost £1 19s. 8d. an acre and 3s. 1d. a bushel. Apart from unusual prices, this is not a paying proposition. In this cost rent and preparation of the land have entered for 21 and 21.4 per cent. respectively; harvesting operations for 16.2 per cent.; and seeding, apart from seed and super, for 7.4 per cent.; purchase of essential material for 14 per cent.; seed for 6.3 per cent.; and general expenses for 13.9 per cent.

MIXED BARLEY AND OATS ACCOUNT.

Fifty-two acres of stubble land sown to a mixture of barley and oats, and intended originally for grazing only, was eventually harvested after light grazing, owing to general shortage of other grain crops. The yield per acre was between 14bush. and 15bush., and the account was closed with the insignificant profit of 5s. 2d., exclusive of rates and taxes, which are estimated at £1 8s. 6d.

PIG ACCOUNT.

When drawing up a scheme of operations for working Turretfield on a financial basis, I had depended upon pigs to turn our second crop (barley) to profitable account. From the point of view of ultimate results, it was immaterial which account showed a profit, providing that in the aggregate the profit was satisfactory. Unfortunately, in two successive seasons both barley and pig accounts have closed on a debit balance; and as profitable revenue is on this farm our main objective, we shall have to consider closing down on these two lines, which both individually and in combination have proved unprofitable.

In 1922-23 the loss on pigs was £304 11s. 9d., and in the present season, 1923-24, the loss has been reduced to £64 12s. 3d., or £65 6s. 6d. inclusive of estimated rates and taxes.

The herd numbered 180 on the 31st March, 1924, and 93 on the 1st April, 1923; numbers were therefore almost doubled during the course of the year. In summary the herd consisted of the following divisions:—

	1st April, 1923.			31st March, 1924.		
	Nos.	Value.		Nos.	Value.	
		£	s. d.		£	s. d.
Boars	4	15	15 0	6	26	5 0
Breeding sows	29	129	3 0	29	127	1 0
Baconers	0	—		44	127	10 0
Porkers	0	—		20	50	0 0
Slips	47	42	6 0	29	58	0 0
Weaners	0	—		15	22	10 0
Suckers	12	6	0 0	27	21	15 0
Runts	1	0	5 0	10	5	0 0

93 £193 9 0 180 £438 1 0

It will be noted that whereas the year opened with the cupboard bare in the matter of pigs being prepared for market, it closed with a very fair number on hand.

Expenditure incurred in 1923-24 in comparison with that of the preceding season is shown below:—

TABLE XII.—*Expenditure incurred for Pigs in 1923-24, in Comparison with 1922-23 Expenditure.*

	1923-1924.			1922-1923.			Percentage.		Means.
	£	s. d.	£	s. d.	£	s. d.	P. cent.	P. cent.	P. cent.
Labor	94	4 10	113	15 7	16.9	19.6	18.25		
Foodstuffs, &c.—									
Wheat (635bush.)	128	7 0	102	15 9					
Barley (1,627bush.)	186	6 4	148	14 0					
Pig meal	25	13 3	15	5 9					
Milk	13	16 8	19	11 11					
Agistment	6	19 8	5	6 10					
Bran and pollard	4	9 6	—						
Water	1	19 0	2	4 8					
Oats and barley	1	0 10	51	9 5					
Garden produce	0	6 0	—						
	368	18 3	345	8 4	66.1	59.7	62.90		
Purchase of boar	—	8 8 0	—		1.5	—	0.75		
Incidentals—									
Registration fees	9	19 6	—						
Use of horses	3	13 8	3	4 7					
Use of implements	1	10 0	1	8 0					
Show entries	2	0 0	—						
Sundries	4	3 3	6	5 0					
Kerosine (spraying)	4	14 8	—						
General	47	17 5	95	17 9					
Rates and taxes	0	14 3	0	14 3					
	74	12 9	107	9 7	18.4	18.6	18.00		
Depreciation on buildings	—	1 13 6	—	1 16 2	0.3	0.3	0.30		
Rent	—	10 5 0	—	10 5 1	1.8	1.8	1.80		
Totals	£555	2 4	£578	14 9	100	100	100		

From the above statement we may note that in handling a herd of swine, 62.9 per cent. of the expenditure is absorbed by foodstuffs, 18 per cent. by labor, and 16 per cent. by incidentals.

On the other hand, revenue earned under this account was as follows:—

TABLE XIII.—*Showing Revenue Earned by Pig Account in 1923-24 and 1922-23.*

Sale of Breeding Stock—	1923-24.			1922-23.		
	£	s.	d.	£	s.	d.
14 boars	67	14	10			
10 sows	34	17	5			
	<hr/>					
116 market pigs	102	12	3	53	9	6
Killed for household	132	4	11	366	3	11
Service fees	4	6	8	7	3	4
Show prizes	—			2	0	0
	9	0	0	9	0	0
	£248	3	10	£437	16	9

If to sales in 1923-24 we add inventory difference, namely, £244 12s., an expenditure of £558 2s. 4d. implies a loss of £65 6s. 6d.

It is not easy to account for this loss, unless one is prepared to accept the view that pigs are not generally profit-earning on an average farm. Personally, I am loath to believe this, particularly when cheap grain is available for feeding purposes. In 1923-24 the wheat supplied to pigs (635 1-15bush.) was charged at a mean price of 4s. 0.5d. a bushel, and the barley (1,626 37-50bush.) at 2s. 3½d., which corresponded to mean local market values less 10 per cent., and should not have proved excessive from the point of view of profitable pigkeeping. No doubt, if the pig account had been charged with wheat at 3s. 6d. and barley at 1s. 6d. a bushel, there would have been a small margin of profit—£16 4s. But, after all, these would have been purely fictitious figures, not in keeping with local prices; and, moreover, it has already been shown that at Turretfield last year wheat was produced at a cost of 7s. 10.6d. a bushel and barley at 2s. 10.4d. a bushel.

Nor can the charges for labor (£94 4s. 10d.) be looked upon as excessive, and incidental expenditure is always unavoidable. There remains, therefore, the question whether, at present prices, pigs can be profitably handled on an average farm—unless, indeed, our management is in some way at fault.

SHEEP ACCOUNT.

The 1923-24 sheep account closed with the satisfactory profit of £858 7s. 3d., which, after deduction of proportional rates and taxes (£15 6s.), leaves a net profit of £843 1s. 3d. for 12 months' transac-

tions. The corresponding figures for 1922-23 were £172 6s. 1d. and £155 0s. 8d. respectively.

The position of the farm flock as to both numbers and values on the 31st March, 1923-24, respectively, is shown below in Table XIV.

TABLE XIV.—*Showing Opening and Closing Inventories of Farm Flock (1923-1924).*

	31st March, 1924.				31st March, 1923.			
	Numbers.	Value.			Numbers.	Value.		
		£	s.	d.		£	s.	d.
Border Leicester rams	11	25	2	0	16	16	10	0
Southdown rams	7	14	14	0	10	25	0	0
Border Leicester ewes	0	—	—	—	30	31	5	0
Merino ewes	520	845	0	0	198	247	10	0
Crossbred ewes	0	—	—	—	274	205	10	0
Merino wethers	2	2	10	0	0	—	—	—
Crossbred lambs	30	32	0	0	0	—	—	—
Ration sheep	12	12	0	0	34	20	8	0
Totals	582	£932	6	0	562	£546	3	0

There is therefore an increase in inventory value of £386 3s., chiefly as the result of the sale of 274 Crossbred ewes and the purchase of 341 Merino ewes in their stead.

Revenue from the flock in 1923-24 and 1922-23 has been summarised below in Table XV.

TABLE XV.—*Showing Summarised Flock Revenues in 1923-24 and 1922-23 Respectively.*

	1923-24.				1922-23.			
	Numbers.	Value.			Numbers.	Value.		
		£	s.	d.		£	s.	d.
Lambs sold	312	410	2	1	342	415	10	3
Ewes sold	281	504	10	4	72	56	16	4
Rams sold	11	33	10	0	20	54	8	0
Killed as rations	—	28	19	6	—	35	7	9
Wool sold	—	698	11	7	—	125	5	6
Sheepskins sold	—	14	11	10	—	8	4	4
Show prizes	—	7	5	6	—	7	16	6
Totals		£1,697	10	10		£703	8	8

It will be noted that 1923-24 revenue from the flock showed an increase of £994 2s. 2d. above that of 1922-23, or over 141 per cent. This increase in revenue is due to improved wool values arising from the change from Crossbred to Merino ewes, and to the sale of the balance of the farm Crossbred ewes.

Expenditure incurred on account of the flock has been summarised below in Table XVI.

Healthy Profits From Healthy Fowls!



Whilst there are still some people whose fowls, even at this time of year, are shirking their duty, the majority of poultry keepers are getting excellent egg returns, and are quite content to sit back and watch the weekly average grow.

But, let us sound a warning note!

Eggs may be plentiful now, and the prospects for the next few months look rosy. But what about next Winter?

Are you going to let the same conditions exist THEN as existed in the cold months just passed? Will you be quite content THEN to resign yourself to another period of low returns, just at the moment when every egg will fetch you the highest price?

Or will you, like 500,000 other wise poultry keepers, begin NOW to make a certainty of healthy profits next Winter?

You can do it easily, naturally, and economically in this way:—

Go to your local grocer, storekeeper, or produce dealer.

Get a 1s. packet of KARSWOOD POULTRY SPICE (containing ground insects) and begin to-morrow to feed it to your fowls in accordance with the directions on the packet. Watch results for a fortnight, and you will see a gradual improvement in the condition and plumage of your birds, for KARSWOOD is an excellent tonic. It contains those very ingredients which enrich the blood and tone up the whole nervous system of the bird—putting it in the very best of health to withstand the long strain of Summer egg-production, and come into the moulting period next year with the energy and health that means a quick and thorough moult, and a speedy return to the most important business of winter egg-laying. Half a million users back this statement up. You, too, can have the good results they get. Start using KARSWOOD to-morrow, and you'll have healthier, more profitable fowls the whole year round.

NOTE THE ECONOMY.

- 1s. packet supplies 20 hens 16 days.
 - 2s. packet supplies 20 hens 22 days.
 - 13s. tin (7lbs.) supplies 140 hens 22 days.
 - 14lbs. tins, 25s. 28lbs. tins, 48s.
- Makes 12 Hens Lay for 1d. a Day.

AGENTS FOR SOUTH AUSTRALIA—

S. C. EYLES & Co.
CURRIE ST., ADELAIDE.

TABLE XVI.—*Summarised Statement of Expenditure under Sheep Account in 1923-24 and 1922-23, Respectively.*

	Total Expenditure.						Percentage.						
	1923-1924.			1922-1923.			1923-24.	1922-23.	Means.				
	£	s.	d.	£	s.	d.	£	s.	d.	P. cent.	P. cent.	P. cent.	
Labor—													
Ordinary	108	10	7		56	4	11						
Shearing	18	2	0		10	16	10						
Dipping	1	2	6		0	16	5						
				127	15	1		67	18	2	24.0	15.5	19.75
Feed—													
Rent of grazing													
arens	214	16	6		247	3	4						
Crop raising	24	12	2		2	16	2						
Chaff, oats, hay ..	15	7	11		9	7	3						
Water	2	1	10		2	6	1						
				256	18	5		261	12	10	48.3	59.8	54.05
Dip, packs, &c.				7	4	4		5	12	1	1.4	1.3	1.35
Incidentals—													
Use of horses	11	11	9		6	17	11						
Tools and plant .. .	0	14	0		0	15	9						
Rates and taxes .. .	16	5	0		17	5	5						
General and sundries	111	5	10		77	3	1						
				139	16	7		102	2	2	26.3	23.4	24.85
Totals	531	14	5		437	5	3	100			100		100

Thus, then, it would appear that on a moderate size farm flock, 54 per cent. of the expenditure is absorbed by feed requirements, 20 per cent. by labor, and the balance by incidentals and overhead charges.

In conclusion, it may be stated that in 1923-24 the farm flock saved Turretfield from heavy losses; and in the circumstances one can realise what, in these days, a farm flock must mean to the average general farmer, and how difficult it is to escape the tendency to throw land out of cultivation and gradually concentrate on sheep.

CATTLE ACCOUNT.

Turretfield carries a small dairy herd, consisting of 12 head, valued at £96 10s. on the 31st March, 1924. The cattle account closed at a loss of £2 7s., or £4 11s. 2d. including rates and taxes (£2 4s. 2d.).

Expenditure under this head has been summarised below, in comparison with that of the preceding season.

	1923-24.	1922-23.
	£ s. d.	£ s. d.
Rent of grazing land and agistment . .	31 5 7	21 8 7
Foodstuffs	36 18 1	62 5 1
Service fees	1 10 0	—
Wages	73 5 4	71 5 11
Use of horses and implements	2 19 5	2 15 8
General and sundries	14 14 7	30 17 10
Depreciation on buildings	0 8 8	0 16 3
Rates and taxes	2 4 2	1 10 7

£163 5 10

£190 19 11

Under this head sales, consisting mostly of cream and milk, realised in 1923-24 £156 2s. 8d., against £217 10s. 5d. in 1922-23.

POULTRY ACCOUNT.

The 1923-24 poultry account closed at a profit of £31 10s. 6d., or allowing 1s. 5d. for rates and taxes, a profit of £31 9s. 1d., against a gross profit of £41 6s. 3d. in 1922-23. Sales amounted to £35 11s. 5d., and expenses to £4 15s. 11d.

STORES ACCOUNT.

As has already been indicated, all farm produce is received into "Stores account" immediately after harvest, at a valuation corresponding to local prices obtaining at the time, less 10 per cent. From this account, farm produce is subsequently sold or distributed for farm use. It follows, therefore, that this is a trading account, on which profits or losses may be made according to market fluctuations.

In 1923-24 this account closed at a profit of £274 11s. 3d., realised chiefly from the sale of hay. In 1922-23 the profit was £173 19s. 3d.

AUXILIARY ACCOUNTS NOT SHOWING IN THE PROFIT AND LOSS STATEMENT.

WORKING HORSES ACCOUNT.

This account is an important one from the bookkeeping point of view, inasmuch as the cost of growing a crop cannot be determined accurately until the actual mean cost of the horse-hour has been settled for the year.

Total expenditure incurred on horses in 1923-24 and 1922-23 was as follows:—

	1923-1924.			1922-1923.		
	£	s.	d.	£	s.	d.
Opening valuation	—	—	—	—	—	—
Foodstuffs	513	3	3	413	0	0
Agistment	3	15	7	357	11	8
Rent of grazing land	63	17	7	16	18	5
Water	2	16	5	53	12	6
Shoeing, &c.	10	8	8	3	14	0
Wages	83	13	1	10	3	3
Depreciation on build- ings and plant	33	6	10	58	9	7
Sundries	0	6	4	27	14	7
	<hr/>			<hr/>		
	711	7	9		531	7 10
Less sales	10	0	6			
	<hr/>					
	701	7	3			
	<hr/>					
	1,114	7	3		915	7 10
Less closing valuation	410	0	0		413	0 0
Net cost of upkeep of horses	£704	7	3		£502	7 10

Taking into account depreciation and loss in value shown in difference between closing and opening inventories, working horses cost us £704 7s. 3d. between 1st April, 1923, and 31st March, 1924. On the other hand, we received from them 32,566 hours of work, as against 27,248 hours in 1922-23. The cost per hour of a horse's work was therefore 5.1909d., or 3s. 5.53d. per eight-hour day, as against 4.425d., or 2s. 11.4d. per eight-hour day in 1922-23.

The two items chiefly responsible for heavier cost in horse work in 1923-24 are rise in cost of foodstuffs and higher wages.

DEPRECIATION ACCOUNT.

The following sums have been allowed for depreciation in 1923-24 and 1922-23 respectively:—

	1923-24.			1922-23.		
	£	s.	d.	£	s.	d.
Buildings	65	16	3	66	9	1
Fencing	43	7	6	70	3	10
Water service	3	12	8	3	16	6
Tools and plant	256	12	2	219	7	1
	£369	8	7	£359	16	6

The total amount written off for depreciation since 1st April, 1921, is £998 9s. 5d.

FARM FALLOWS ACCOUNT.

Expenditure incurred on 480 acres of farm fallows to 31st March, 1924, was as follows:—

	£	s.	d.	£	s.	d.
Wages	113	19	0			
Horses	320	9	2			
Implements	35	6	1			
				469	14	3
Rent				208	2	11

Total £677 17 2

Thus, then, to the 31st March, 1924, 480 acres of bare fallow involved us in an expenditure of £677 17s. 2d., or 28s. 2.9d. an acre, inclusive of rent, as against 21s. 5d. an acre in 1922-23. It should be observed, however, that in this total are included 184 acres of two-year fallow, costing £274 7s. 10d., or £1 9s. 10d. an acre. If we omit this area the mean cost of last year's fallow would be 27s. 3d. an acre.

HOUSEKEEPING ACCOUNT.

The living expenses of the farm manager and his family, as well as those of portion of the farm staff, have been met from farm revenue. Expenditure has been as follows:—

	1923-24.			1922-23.		
	£	s.	d.	£	s.	d.
Wages	78	7	1	71	3	9
Provisions	101	14	2	92	16	10
Farm produce	74	19	8	87	7	7
Water	6	10	0	6	10	0
Kerosine and sundries	6	6	3	4	16	9
Firewood	7	4	6	5	11	8
Depreciation	47	12	3	45	5	7
	£322 13 11			315 12 2		

This expenditure on housekeeping account of £322 13s. 11d. for 12 months represents a net cost per individual of 3s. 2.57d. per day, or 22s. 6d. per week, or £58 13s. 2d. per annum.

Corresponding figures in 1922-23 were 2s. 2.24d. per day, or 15s. 3.66d. per week, or £39 18s. 1d. per year.

TOP DRESS
YOUR PASTURES
 WITH
TOP SPECIAL
SUPER (45% W.S.P.)
 AND
Double Your Profits.

The Adelaide Chemical and Fertilizer Co. Ltd.

GENERAL SUMMARY.

The salient features in this report may be summarised as follows:—

1. Turretfield Demonstration Farm is 1,604 acres in area. It has been run on a purely commercial basis since 1st July, 1921.

2. Farming operations have been run largely on a four-course rotation, namely, (1) bare fallow, (2) wheat or hay, (3) barley or oats, (4) grazing crop. Sheep and pigs form the main types of live-stock handled.

3. The original capital value of land, improvements, and equipment (fixed and floating capital) was £17,590 18s. 2d.

4. The net earnings of the farm in 1923-24 were £1,045 3s. 2d., or 5.94 per cent. on capital engaged. The mean net earnings between 1st July, 1921, and 31st March, 1924, were represented by 7.06 per cent. on capital engaged.

5. The farm has paid into Government revenue since 1st July, 1921, the sum of £2,462 2s. 5d., representing 5 per cent. interest on fixed and floating capital.

6. Accumulated net profits after payment of interest into Government revenue amounted to £1,098 13s. 2d. on the 31st March, 1924.

7. Net profits in 1923-24, £216 5s. 11d., were the lowest since initiation of the scheme.

8. Low net profits in 1923-24 are attributable to an exceptionally unfavorable winter, which led to partial failure of the crops.

9. January to May was practically rainless. Subsequently, from 5th May to 5th August, rain was practically continuous: 70 rainy days out of 93, and a total of 15in. of rain.

10. There were profit balances on sheep account, stores account (trading account), and poultry account; and losses on wheat account, hay account, barley account, pig account, and cattle account, leaving on the balance a profit of £216 5s. 11d.

11. Inability to bring under crop 184 acres of bare fallow involved the farm in a dead loss of £698 10s. 5d., the bulk of which was distributed among crops mainly affected. Of this total, £274 7s. 10d. was taken over by the 184 acres of two-year fallow, which to-day carries 1924-25 crops.

HAY ACCOUNT.

12. The hay crops yielded 1 ton 10cwts. 44lbs. from 138.48 acres; of this total 82.95 acres represented wheaten hay on bare fallow, returning 1 ton 6cwts. per acre, and 55.53 acres oaten hay on stubble land, averaging 1 ton 16cwts. 107lbs. per acre. The wheaten hay represented a heavy loss, the oaten hay a handsome profit.

13. The mean loss on the hay crop was 8s. 10d. an acre, or inclusive of estimated rates and taxes, 9s. 5d. an acre. In this loss is included

the sum of £146 12s., representing proportional loss on bare fallow which could not be seeded; but for this burden, there would have been a profit of 12s. 3.9d. an acre on the combined hay crops.

14. The mean cost per acre of growing wheaten hay on bare fallow was £4 3s. 3.3d., exclusive of proportional loss on unused fallows. This is slightly less than expenditure incurred for similar purposes in preceding two seasons.

15. The mean cost per ton of growing wheaten hay on bare fallow was £3 4s. 0.7d., which, owing to low mean yield, is considerably higher than cost of previous years.

16. Last year's conclusion is confirmed that in present circumstances farmers cannot grow and stack wheaten hay sown on bare fallow at an expenditure of less than 30s. to 40s. a ton. In unfavorable seasons the cost may be considerably higher.

17. In the growing and handling of a wheaten hay crop, 43 per cent. of the expenditure is absorbed by labor, horses, and implements; 10 per cent. by seed; 14 per cent. by purchased commodities; 20 per cent. by rent; and 13 per cent. by incidentals.

18. Oaten hay, grown on stubble land, cost £3 15s. 1d. an acre, and £2 0s. 7d. a ton, on the basis of hay carted and stacked. The mean yield was 1 ton 16cwts. 107lbs., and the profit per acre £2 12s. 6d.

WHEAT ACCOUNT.

19. Normally, at Turretfield, the least promising crops are reaped as wheat, the better ones being utilised as hay. This policy is followed because it is recognised that of the two, haygrowing is usually more profitable in this district. Hence, Turretfield wheat yields have been low, and do not do justice to the district.

20. The crops reaped as wheat in 1923-24 suffered from the season quite as much as the hay crops: hence, low yield and a heavy loss on the account.

21. The area reaped as wheat in 1923-24 was 144.08 acres, and the mean yield 9.93bush. per acre.

22. On the basis of 3s. 7½d. a bushel, the current local price less 10 per cent. at harvest time, the wheat account closed at a loss of £2 2s. 0.5d. an acre, or if we take into account proportional loss on unused fallows, of £3 17s. 5d. an acre.

23. At Turretfield the inclusive cost of growing wheat on bare fallow is represented by £3 18s. an acre. On this basis it would take 15½bush. at 5s. and 19½bush. at 4s. to pay for cost of production.

24. In the cost of production of wheat, it is estimated that labor, both direct and indirect, has a value of 19s. per acre. Hence, from a 300-acre crop of wheat grown on bare fallow, the returns from which only just balance expenditure incurred, the farmer and his family would have earned as wages no more than £285. This fact stresses the necessity of combining other sources of income with wheatgrowing.

25. In wheatgrowing 39 per cent. of the expenditure is absorbed by labor, horses, and implements, 11 per cent. by seed, 21 per cent. by rent, 15 per cent. by purchase of essential material, and 14 per cent. by incidentals.

BARLEY ACCOUNT.

26. Barley, like other winter-sown crops, was equally unsuccessful in 1923-24.

27. Owing to lateness of the season, 12.95 acres of bare fallow were sown to barley, and these yielded 19bush. 35lbs. to the acre, representing a loss of £2 12s. 3d. an acre, or if we take loss on unused fallows into consideration, a total loss of £4 7s. 7d. an acre. It should be added that at Turretfield barley is always used as a stubble crop, and the use of bare fallow in 1923-24 must be regarded as purely accidental.

28. On stubble land 129.19 acres of barley yielded 13bush. 5lbs. to the acre, showing a net loss of 12s. 0.9d. an acre with barley at 1s. 11½d. a bushel.

29. The mean cost per acre of growing barley on stubble land has been £1 19s. 7.5d., and the mean cost per bushel 3s. 0.7d.

30. The main object of growing barley as a second crop at Turretfield has been to utilise it as pig feed. At these prices, however, it represents costly feed, and in view of the failure of both barley and pigs at Turretfield, we shall have to consider some alternative use of our stubble crops. Probably an oaten crop cut for hay would prove more profitable.

PIG ACCOUNT.

31. In 1923-24 the pig account closed at a loss of £64 12s. 3d., or £65 6s. 6d. inclusive of estimated rates and taxes. The loss on the same account in 1922-23 was £304 11s. 9d. Mean prices quoted for medium-weight baconers on the Adelaide market were £4 17s. 5d. in 1923-24 and £3 16s. 11d. in 1922-23; it cannot therefore be argued that liveweight prices were exceptionally low.

32. In each season the herd carried 29 breeding sows and total expenditure was £558 2s. 4d. in 1923-24, and £578 14s. 9d. in 1922-23. Mean percentage distribution of expenditure shows labor to have absorbed 18 per cent., foodstuffs 63 per cent., and incidentals the balance.

33. The bulk of the foodstuffs used was represented by wheat and barley, which in 1923-24 were charged at 4s. 0.5d. and 2s. 3½d. respectively, representing mean local values less 10 per cent.

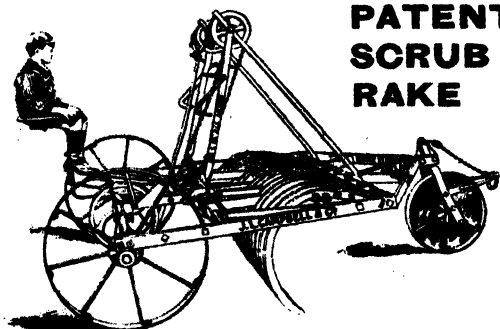
34. Sales, &c., aggregated £248 3s. 10d. in 1923-24, and £437 16s. 9d. in 1922-23, whilst difference on valuation was £244 12s. in favor of 1923-24.

35. After three years' trial, I am bound to admit that we have failed to show the profitableness of developing the pig industry on an average farm.

SHEEP ACCOUNT.

36. The sheep account closed at a profit balance of £858 7s. 3d., or if allowance be made for proportional rates and taxes, of £843 1s. 3d. This handsome profit saved the year's transactions from actual loss. The corresponding profits in the preceding season were £172 6s. 1d. and £155 0s. 8d. respectively.

37. The increase in profits in 1923-24 is mainly due to the replacement of Crossbred ewes by Merinos, leading to improvement in wool returns (£698 11s. 7d. against £125 5s. 6d.), and profitable disposal of fat Crossbred ewes.



Takes the place of 15 men. Will rake anything your horses can get over. Also levels the ground and pulls all loose stumps. Any lad can work it. Hundreds now in use, and every Farmer delighted.

The Improved McGillivray Patent Rotary Grain Pickler

WET OR DRY.

As used by Government
Experimental Farm.

This machine is always clean, and ready to put away when finished pickling.
For speed, efficiency, economy, and simplicity, this machine stands alone.

FULL PARTICULARS, &c., FROM SOLE MAKERS—

J. L. CAMPBELL & Coy., 147, Currie Street, Adelaide,
South Australia.
AGRICULTURAL ENGINEERS.

38. On the 31st March, 1924, the flock consisted of 582 head, of which 520 were breeding ewes.

39. Expenditure incurred for the flock was £531 14s. 5d. in 1923-24 and £437 5s. 3d. in 1922-23. In this expenditure 20 per cent. represents labor, 54 per cent. provision of food, and the balance incidentals.

40. Revenue from the flock was represented by £932 6s. in 1923-24 and £546 3s. in 1922-23. The inventory difference in favor of 1923-24 was £386 3s.

CATTLE, POULTRY, AND STORES ACCOUNTS.

41. The home dairy herd, which consists of 12 head, showed a loss of £2 7s. in 1923-24, against a profit of £22 11s. 1d. in 1922-23.

42. Poultry account showed a profit of £31 10s. 6d., against £41 6s. 3d. in 1922-23.

43. Stores account (trading account) showed a net profit of £274 11s. 3d., realised chiefly on sales of hay taken over at harvest time. The profit balance in 1922-23 was £173 19s. 3d.

AUXILIARY ACCOUNTS NOT SHOWING ON PROFIT AND LOSS STATEMENT.

44. In 1923-24 the cost of the horse-hour amounted to 5.1909d., or 3s. 5.53d. per eight-hour day. Corresponding figures in 1922-23 were 4.425d. and 2s. 11.4d. per eight-hour day.

45. Total depreciation written off in 1923-24 was £369 8s. 7d. Since 1st July, 1921, total depreciation written off amounts to £998 9s. 5d.

46. Inclusive of rent, the cost of bare fallows in 1923-24 was 28s. 2.9d. an acre, against 21s. 5d. in 1922-23. This increase in cost is partly due to the inclusion of 184 acres of two-year fallow and partly to increased cost of the horse-hour.

47. The cost of housing and boarding the resident farm staff was 3s. 2.57d. per day, or 22s. 6d. per week, as against 2s. 2.24d. and 15s. 3.66d. in 1922-23.

48. The manager (Mr. F. E. Waddy) is to be congratulated on a satisfactory final balance-sheet, notwithstanding adverse seasonal conditions.

49. I desire to express appreciation of the solid and conscientious work carried out by the accountant (Mr. L. S. Smith) and the assistant accountant (Mr. J. W. McDonald), in preparing statements and figures for this report.

50. Attached herewith is the 1923-24 balance-sheet and the profit and loss statement.

TURRETFIELD DEMONSTRATION FARM.

PROFIT AND LOSS ACCOUNT.

April 1st, 1923, to March 31st, 1924.

Debit.	£	s.	d.	Credit.	£	s.	d.
Wheat crops	557	10	3	Barley and oats, milked crop	0	5	2
Hay crops	61	5	0	Livestock—			
Barley crops	131	2	8	Sheep	858	7	3
Livestock—				Poultry	31	10	6
Pigs	64	12	3	Tools and plant—			
Cattle	2	7	0	Profit on sale of engine	84	14	10
Interest on floating capital, 5 per cent. on £3,353 18s. 2d.	£167	13	11	Stores account—			
Add interest on current account	48	12	0	Hay, grain, &c.	274	11	3
Net profit	216	5	11				
	216	5	11				
	£1,240	9	0				
					£1,249	9	0

TURRETFIELD DEMONSTRATION FARM.

BALANCE-SHEET AS AT MARCH 31st, 1924.

Liabilities.	£	s.	d.	Assets.	£	s.	d.
Value represented by land and improvements	14,237	0	0	Sundry debtors	—	—	—
Value represented by advance for floating capital	3,353	18	2	Land	10,779	0	0
Bank advance (Treasury, revenue account)	17,500	18	2	Clearing	44	17	8
Sundry creditors	2,200	0	0	Buildings and improvements	£3,904	10	8
Net profit	—	—	—	Less depreciation	112	16	5
Net profit to March 31st, 1923	892	7	3		3,191	14	3
Year ended March 31st, 1924	216	5	11	Tools and plant	14,015	11	11
				Farm stock on hand	1,267	7	0
				Manures on hand	1,248	15	9
				Livestock at valuation on March 31st, 1924—	38	13	1
				Horses	410	0	0
				Cattle	96	10	0
				Pigs	438	1	0
				Sheep	932	6	0
				Poultry	8	5	0
				Fallow	1,885	2	0
				Stubble	677	17	2
				Houseskeeping stores	83	7	2
				Sundries	317	1	3
				Cash in bank (Treasury deposit account)	2,446	14	6
				Cash in hand	2	11	6
					£21,968	13	11

THE ADELAIDE SEED SUPPLY.

[By EDGAR W. PRITCHARD, Botanical Assistant.]

Early in July of this year an investigation was undertaken by this department into the quality of the seed supply in the city of Adelaide. The seeds were bought over the counter, from the stores of the leading seedsmen, and tested for germination by the standard methods, each test being carried out in duplicate. The results are tabulated below:—

No.	Variety.	Germination Percentage.	Standard Germination N.S.W. Seed Act.
<i>Seedsmen No. 1.</i>			
1.	Beans, Broad, Early Long Pod	94	70
2.	Cabbage, St. John's Day	96.5	60
3.	Carrot, Early Short Horn	63	55
4.	Lettuce, New York	99.5	65
5.	Lotus Corniculatus	72	60
6.	Parsnip, Hollow Crown	52.5	50
7.	Peas, Daisy	95	80
8.	Tomato, Early Dwarf Red	95.5	60
<i>Seedsmen No. 2.</i>			
9.	Beet, Egyptian Turnip Rooted	62.5	60
10.	Cabbage, Enkhuizen's Glory	62.5	60
11.	Carrot, Intermediate Improved	76	55
12.	Lettuce	97	65
*13.	Parsnip, Hollow Crown	3	50
14.	Peas, Daisy	90	80
*15.	Rye Grass, Perennial	56.5	65
16.	Tomato, Ponderosa	92.5	60
<i>Seedsmen No. 3.</i>			
17.	Cabbage, Early London	82	60
18.	Carrot, Intermediate	73.5	55
19.	Mangel, Long Red	86	60
20.	Peas, Yorkshire Hero	83.5	80
*21.	Radish, White	58.5	75
22.	Beet, Silver	69	60
23.	Tomato, Ponderosa	83.5	60
<i>Seedsmen No. 4.</i>			
24.	Beans, Broad	96	70
*25.	Cauliflower, Asiaticus	46.5	60
*26.	Celery, White Plume	4.5	50
*27.	Kentucky Blue Grass	12	40
28.	Mangold	84	60
*29.	Peas, Yorkshire Hero	39	80
*30.	Radish, White Icicle	67.5	75
*31.	Turnip, Early White Stone	61.5	65

The Adelaide Seed Supply—continued.

No.	Variety.	Germination Percentage.	Standard Germination N.S.W. Seed Act.
<i>Seedsman No. 5.</i>			
32.	Beet, Crimson Globe	73.5	60
*33.	Cauliflower, Eclipse	23	60
34.	Onion, White Spanish	96	50
35.	Peas, Yorkshire Hero	100	80
36.	Radish, Long Scarlet	90	75
*37.	Turnip, Early White Stone	53.5	65
<i>Seedsman No. 6.</i>			
*38.	Beet, Silver	35.5	60
*39.	Cauliflower, Large Asiatic	39.5	60
*40.	Peas, William Hurst	60.5	80
41.	Rape	90	70
42.	Turnip, Snowball	76.5	65
<i>Seedsman No. 7.</i>			
43.	Beans, Broad	98	70
*44.	Cabbage, St. John's Day	38.5	60
45.	Cauliflower	82	60
46.	Lettuce, New York	96.5	65
47.	Onion, Brown Spanish	70.5	50
48.	Peas, William Hurst	81	80
49.	Turnip	67	65
50.	Tomato, Early Dwarf Red	95.5	60
<i>Seedsman No. 8.</i>			
51.	Carrot, Early Short Horn	89.5	55
52.	Clover, Crimson	97	75
53.	Lettuce, New York	97	65
54.	Rape, Essex Dwarf	88	70
55.	Tomato, Ponderosa	69	60

*Means below standard.

The results, I think, speak for themselves. The standards under the New South Wales Seed Act are not standards for good seed; but the limit, above which every parcel of seed purchased by an inspector must come, if the seedsman is to avoid prosecution under the Act.

Of 55 samples, 15 (or 27 per cent.) proved to be under this standard. Further it will be seen that of eight seedsmen involved two had no failures in the test, and two more had only one failure each.

Surely these two points plainly show the need for a Pure Seed Act in South Australia, first to protect the grower from loss of money and time through planting bad seed, and second to protect the honest and efficient seedsman from the unfair competition of his unscrupulous and careless rival.

AGRICULTURAL BUREAU.

CONFERENCE AT PORT ELLIOT.

The annual conference of Southern Branches of the Agricultural Bureau was held at Port Elliot on Friday, August 15th. The Department of Agriculture was represented by the Minister of Agriculture (Hon. T. Butterfield, M.P.), Mr. C. J. Tuckwell (Member of the Advisory Board of Agriculture), the Director of Agriculture (Professor A. J. Perkins), the Secretary to the Minister of Agriculture (Mr. W. L. Summers), the Superintendent of Experimental Work (Mr. W. J. Spafford), the Dairy Expert (Mr. P. H. Suter), the Chief Inspector of Stock (Mr. C. A. Loxton, B.V.Sc.), the Wool Instructor of the School of Mines (Mr. A. H. Codrington), the Orchard Instructor and Inspector for the Southern District (Mr. C. H. Beaumont), and the Secretary of the Advisory Board of Agriculture (Mr. H. J. Finnis).

A large number of delegates and visitors attended from Rapid Bay, Milang, Brinkley, McLaren Flat, Port Elliot, Rockwood, Currency Creek, Strathalbyn, Ashbourne, Aldinga, and Blackwood.

Mr. W. H. Hargreaves (vice-chairman of the Port Elliot Branch) presided over the gathering, and in the course of a short address, extended a cordial welcome to the officers of the Department of Agriculture and visitors from neighboring Branches.

MINISTER'S ADDRESS.

The Minister of Agriculture (Hon. T. Butterfield, M.P.) on being called upon to open the conference said he was very glad as a representative of the Government to be present at a conference of agriculturists. He had had 26 years' experience on the West Coast of the State and knew of the troubles and difficulties that the man on the land had to face. It was not possible for a representative of the Government to be present at all conferences, but whenever possible, he would do his utmost to attend such gatherings as were being held that day.

MARKETING DIFFICULTIES.

Since the Government had been in office, they had been besieged by deputations and representatives of the fruit, wine, dairying, and other industries, all asking for help in regard to the marketing of produce. That was a difficulty that was not singular to this State. The man on the land had been told to produce, produce, produce, and then it was found that the produce could not be sold. The difficulties of marketing were so great that after having produced, they were unable to secure sufficient returns from the produce to enable them to make a living.

UNDER PRODUCTION.

The Minister was of the opinion that a good deal of the difficulty in selling was brought about because there was not sufficient production and because they had not arrived at that stage at which they could market profitably. The more they produced the better opportunities they would have of effecting sales. Referring to the meat

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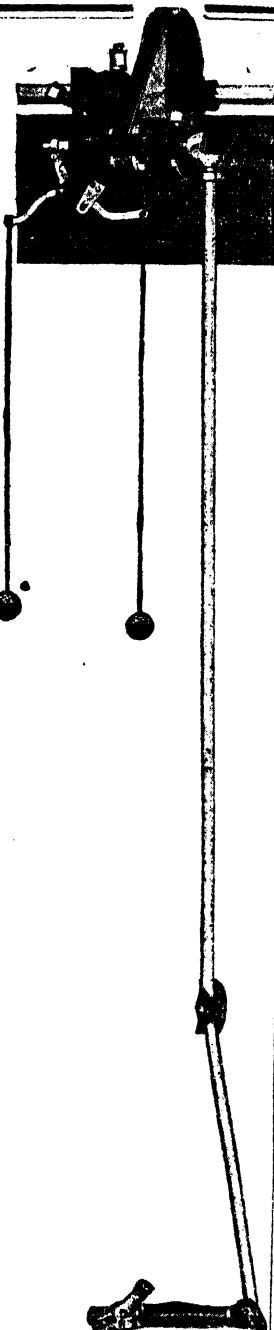
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industry, he said South Australia had a market overseas, but it was in a comatose state, chiefly because they had not realised or grappled with the difficulties in the way. Australia was not able to keep up a continuous supply of meat. People overseas who handled Australian lambs had found out that our producers were able to send along lambs for three months of the year, the supplies then ceased, and the buyer overseas had to look elsewhere for his goods. The purchaser went to the Argentine for his meat, and because the Argentine was able to maintain a continuous supply, the Argentine captured the trade. Practically the same could be said of the fruit trade. That was a phase of the position which he thought had not been put clearly before the people before. Once having got the customer, if they could not supply from their own country, they would have to buy from somebody else in order to hold the customer until supplies from home were available. The chief point in that direction was to have a complete organisation of the growers so that no producer would be allowed to damage any line of produce by sending out inferior produce that was not true to label.

RED WHEATS.

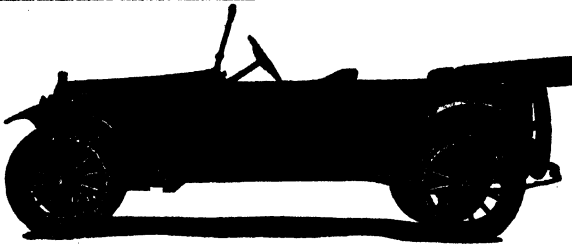
The Minister said that on account of the quantity of red wheat that was being grown in Australia, he had deemed it advisable to refer to the matter in the House. Australia's reputation as a wheat producing country had been built up on the quality of her white wheats, which were used for blending with wheat produced in other countries of the world. It was not fair that a few growers should be allowed to injure the reputation of the rest of Australia.

THE MURRAY SETTLEMENTS.

Continuing, Mr. Butterfield mentioned that the Government was seriously concerned with the position on the River Murray. A report on that matter was being drawn up by the Irrigation Commission, which report he hoped would be ready in February or March. Five years ago, after visiting Pompootea, he had suggested that an inquiry was then necessary. So far as he was concerned, there would be no wiping off of liabilities; that possibility would be thought desirable by many people, but he considered it better to take a load off the backs of the settlers temporarily and if they should be in a position in 5, 10, or 20 years, to pay back to the State, then the Government should be in a position to make them pay. The settlements along the Murray had involved the Government in the expenditure of an immense amount of money, and he hoped that the people would not become panic stricken and go to the Government for concessions that were not altogether fair.

RURAL BANK.

The present Treasurer, Mr. Gunn, was very keen on a rural bank. As Commissioner of Crown Lands, he was astounded at the number of consents to mortgages he was called upon to sign. The number was so great that he at times felt that the whole of the land of the State was mortgaged, and at high rates of interests. The rural bank would also be made a current banking institution. If the Government could



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borrow money at 6 per cent. surely they could let it to the public at 7 per cent. Nobody had a better right than the Government to lend money to the people who were their tenants. The rural bank would be an institution that would make all advances to the rural producers at the lowest rate of interest, and as a bank owned by the people of the country, it would not "kick the producer off his property" in a bad year. It would be to the advantage of the State to keep the men there. He hoped that on some future occasion he would have the opportunity and pleasure of again visiting another conference of Southern Branches. The interests of the producers were the Government's interests, and he asked them to believe that the present Government had not only their interests, but that of the whole community at heart. He then declared the conference open.

Mr. J. P. Colebatch (Port Elliot), seconded by Mr. H. B. Welch (Port Elliot), moved a vote of thanks to the Minister for the opening address.

SUMMER FODDERS.

In the course of a paper dealing with the subject "Summer Fodders," Mr. G. Sissons, of the Strathalbyn Branch, said summer fodders in the Strathalbyn district were grown mainly with the idea of supplying green feed for dairying stock. Speaking from experience, he had found that lucerne, maize, Sudan grass, chou moellier, mangolds, and melons had proved the most satisfactory crops. Mangolds could be profitably fed in conjunction with maize, and during the last two seasons, he had grown very profitable crops. The seed should be sown with super in rows about 30in. apart, thus allowing for subsequent cultivation with a Dutch hoe. When the plants were about 4in. or 5in. high, they should be thinned out, leaving 18in. between each. The roots should be pulled at the advent of the rainy season, or from August to September. They could be stacked in heaps similar in shape to those of road metal and then covered with straw and earth, with lengths of stove piping inserted into the heap to provide ventilation. Varieties recommended were long red, yellow globe, and giant half-sugar. Lucerne was a crop that gave a large bulk of fodder, improved the condition of the soil, and all classes of stock did well on it. Several varieties of lucerne seed were on the market, but he thought one could not do better than use local seed. Although autumn appeared to be the natural time for sowing, many factors essential to success seemed to be against sowing at that time of the year. Weeds, lucerne flea, and the hard setting of the soil each militated against the best results. He favored spring sowing. When established, lucerne would benefit very considerably by a cultivation with a scarifier. After cutting, the crop should be left for a day or two before any application of water. In cutting the crop for hay much depended on the weather but as a general rule the lucerne, after being cut, should be left in swathes for a sufficiently long period to enable it to wilt slightly, after which it could be raked into windrows. Regarding the merits of the various fodder crops as milk producers, Mr. Sissons was confident that Sudan grass held pride of place. It would grow successfully under very dry conditions and for the best results the seed should be sown at the rate

of 8lbs. to 10lbs. to the acre, with super, in rows, to allow for cultivation. To handle the crop economically, he advised allowing the stock to graze on the grass, because if handled, it was necessary to allow the plants to make sufficient growth to enable the scythe to be used, and at that stage of growth the stalks were too hard and stock did not eat the fodder so readily. The first grazing should take place when the plants had obtained sufficient root hold to prevent the stock pulling them up. If the soil was in good condition the seed could be sown fairly deeply. Sudan grass should be followed by a leguminous crop, because it was detrimental to cereals. Melons were easily grown, and cows ate them readily, but except as a standby, they were not very profitable, because they impoverished the land and involved a good deal of labor in cutting them up for the cattle.

SHEEP FOR THE SOUTH.

Mr. G. A. Stacey, a delegate from the Rapid Bay Branch, dealt with the subject, "The most suitable Sheep for Southern Districts." He held the opinion that the Comeback was the most desirable animal. To secure these the farmer should procure a good line of large framed Merino ewes. Breeding should be delayed until the ewes were four-toothed, when they should be mated. The selected sire should possess a well-shaped body, deep and well-sprung ribs, a head not too coarse, and a fleece showing plenty of lustre and character. During lambing, the flock should be inspected each day. When four weeks or five weeks old the lambs should be tailed and marked. At weaning time, which should be when the lambs were five months to six months old, they should be placed in a good feed paddock. If they did not receive any check, the wethers could be marketed during the winter months, when there was always a dearth of prime lamb in the market. At shearing time the opportunity should be taken to cull all undesirable young crossbred ewes. When two-toothed, the crossbred ewes could be mated with a good Merino ram. The ram selected should have a plain body, heavy fold on the neck, good dense fleece, showing plenty of character and of a soft handling nature. If the Comeback lambs were properly nourished and cared for, they would cut about 4lbs. or 5lbs. of wool. The wool grown on the Comeback raised in the south was, in his experience, equal in quality to that of the Merino. During the past season his Comeback wool realised 1d. per lb. more than the Merino.

FAT LAMBS.

Mr. J. J. Bradford, of the Strathalbyn Branch, then read a paper, "Fat Lamb Raising." A short discussion followed, during which Mr. C. Ness of the Rapid Bay Branch contended that a scheme should be formed whereby all rams offered for sale should be examined by an expert and declared typical of the breed before being offered for sale. The Wool Instructor of the School of Mines (Mr. A. H. Codrington) said if South Australia wished to make a favorable impression on the overseas lamb market, it was essential that the type of lamb that was demanded by the export market should be produced. He favored the English Leicester-Merino half-bred ewe and a South Down ram mated

with that ewe. In those two breeds, they had the essentials of carcass that would go far towards meeting the requirements of the English market. If, however, the best results were to be obtained it was necessary to spend money in the purchase of good rams.

SHEEP FOR THE SMALL FARMER.

Mr. A. E. Henley (Rockwood), in the course of a paper, "Sheep on Small Farms," said he would take as an illustration a holding comprising about 600 acres. On such a holding, he thought, the best scheme would be to keep a flock of ewes and breed lambs; the lambs being sold as "fats." Two hundred acres would be put under wheat and 100 acres devoted to the hay crop. Ewes should be purchased off shears at the end of November, and should have the run of the farm until the commencement of seeding. The majority of the ewes should be Merinos and the balance Comebacks. He suggested that the Merinos should be mated with a Border Leicester ram and the Comebacks with either the Dorset Horn or Shropshire. To provide feed, 100 acres of stubble land should be disced soon after harvest and sown with one bushel of oats and 1 cwt. of super to the acre. The lambs could be turned on to the crop two days after marking, and allowed to remain there for a week. They should then be given a change of pasture until August, when they could again be placed in the feed paddock until the end of September, and at which time they could be removed from the oats altogether. The crop would subsequently mature and it could be reaped or cut for hay. Lambs from the Border Leicester ram should be mated to the Dorset Horn at the end of January or early in February. With the ewes that were purchased from other holdings, he had found that they took some little time to become accustomed to their new quarters, and they had a tendency to leave their lambs. The main essential in rearing lambs was to make ample provision for good fodder and water.

DESTROYING FOXES.

Mr. L. Morris (Rapid Bay) who read a paper dealing with this subject, considered poisoning the best method of dealing with foxes. To prepare for poisoning he said a good trail should be made, and baits of pieces of rabbits, parrots, and small ground birds used. He did not think it advisable to poison the whole carcass of a sheep, because the bones would be dangerous to stock and dogs. A piece of meat weighing about 1 oz. was large enough for a bait, and should always be buried so that birds would not be destroyed. He had always used strychnine, but now that foxes were becoming more difficult to poison, he suggested the use of cyanide of potassium. In cases in which the whole of the carcass was poisoned, strychnine should be inserted in several different places, at the tongue, under the lower jaw, and the ribs behind the fore-legs. Poisoned fruit, and especially figs, if placed in an old orchard would also prove good bait. For wary foxes he suggested that where a lamb had been killed, the carcass should be removed and a bait of cream put in its place. During mating season, foxes were especially hard to destroy, but if a vixen was poisoned, it was advisable to put another bait in the same place, because the foxes usually travelled in pairs. For trapping,

at warrens, two or three traps should be set at each entrance. In open country, an unpoisoned bait should be buried where it could only be approached from one direction, and here the trap should be set; a suitable place was close to a forked log. The trap should not be pinned, but fastened to an object that the fox could drag, otherwise the animal in its struggles would pull off its leg and escape.

CAULIFLOWER WRIGGLERS.

The Port Elliot Branch asked for information as to the best method of destroying cabbage and cauliflower wigglers. The Horticultural Instructor (Mr. Geo. Quinn) who supplied a reply, said the green "wigglers" found "holing" leaves of cabbage and cauliflower and other members of the cabbage family were the larvae of the Diamond-backed cabbage moth (*plutella cruciferarum*). It ate the green tissue and left the epidermis which split leaving a hole. The caterpillars were easily poisoned in the early stage. Spraying with arsenate of lead, 1lb. of paste arsenate in 20galls. of water, or 1lb. of powder in about 35galls. of water, could be applied up to the time when the centres began to close over the hearts of cauliflowers. This adhered to the old leaves, which, of course, were discarded when the vegetables were cut. If sprayed thus at the first signs of attack on the young plants, the "wigglers" could be suppressed, but nothing could be done when the plants were much advanced as described by hearting or developing flowers.

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PEANUTS.

In reply to a question regarding the method of cultivating peanuts, which was submitted by Mr. J. P. Colebatch (Port Elliot), the Horticultural Instructor (Mr. Geo. Quinn) said peanuts were planted in spring by placing the unroasted nuts in rows 3ft. or 4ft. apart, with the seeds set about 1½ft. apart in the rows and covered 2in. or 3in. deep. Free, rich, sandy soil was required to enable the pods to be buried by the growth of the plants. From 30lbs. to 50lbs. of seed were used per acre in U.S.A. As they grew during summer, irrigation was resorted to in dry climates, such as ours. The soil was kept well tilled and free from weeds, a loose mellow surface being necessary, but the ground beneath the spread of the foliage should not be disturbed after the blossoming began. Harvesting was advocated fairly early, and delay to enable late nuts to fill out was considered undesirable. The plants were ploughed or dug out and allowed to lie nuts downwards on the ground for a week to mature before being bagged.

DRY PICKLE.

The Milang Branch, at the instance of Mr. J. P. Bagley, asked whether dry pickling had any advantage over wet pickling, as a means of treating smut in wheat. The Superintendent of Experimental Work (Mr. W. J. Spafford) said dry pickling was understood to mean the treatment of seed with a copper carbonate powder. Many experiments had been conducted in which copper carbonate had been used to pickle seed in place of formalin and bluestone, and the results that had been secured had been very marked. The Department of Agriculture had tested dry pickle at the Minnipa and Booborowie Experimental Farms last year. Some trouble had been experienced with the drills. The grain was mixed with the pickle, and at Booborowie the driving bars of the drill used, twisted and finally broke. That, however, had not been the case during the past seeding. So far the work that the department had done confirmed the results secured in New South Wales and U.S.A. It had been found that dry pickling did control bunt, and it did not interfere with the germination of the seed. In the past, with the formalin and bluestone treatment, under some conditions, only a 50 per cent. germination was received. Another trouble with the wet pickle had been that treated grain germinated much more slowly than unpickled seed. The ordinary methods of pickling always delayed germination, but the common experience with copper carbonate had been that the grain so treated germinated as well as grain that was not pickled. The seed could be pickled any time after harvesting without any danger of its becoming re-infested later on.

CEREALS FOR HAY.

The Milang Branch also asked, "What is the best cereal for hay, and the best stage at which to cut same?" The Director of Agriculture (Professor A. J. Perkins), in reply, said that in Australia wheat was far more extensively grown for hay than any other cereal. For the last 10 years, of the total area cut for hay, wheat represented 69 per cent., oats 29 per cent., and other forage plants, including lucerne,

2 per cent. As to what was the best cereal for hay, it was very difficult to say, because one was bound to take certain economic conditions into consideration. There was the fact that wheat might be better adapted to certain districts than oats. Many farmers were not certain at seeding time as to what area they would cut for hay because as the season advanced the crop might appear more profitable for grain than for hay and *vice versa*. In so far as actual qualities were concerned, oats were probably preferable to wheat. Barley and rye were both inferior to either wheat or oats. As to the best time to cut the crop for hay, the Director said that before leaving Roseworthy Agricultural College, Mr. W. J. Spafford and himself did a certain amount of work on that question. The February, 1914, *Journal of Agriculture* would show a complete report of that investigation. They selected an even crop of wheat and cut half acres of the crop every seven days after blooming until the complete ripening of the crop, which gave seven cuts. This investigation showed that to secure the heaviest yield, the crop should be cut when the grain entered the soft dough stage, but that did not necessarily mean that it would then make the best hay. As the grain ripened the nutriment in the leaves, flag, and culm, migrated towards the heads and if they allowed the hay to become too ripe, it meant that the straw and grain were being harvested and not hay. Good hay should be of a green color and contain a fair amount of shrivelled grain.

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RESOLUTIONS.

On the motion of Mr. J. P. Bagley (Milang), seconded by Mr. C. Landseer (Milang), the conference decided, "That rams sold at auction be true to type." Mr. A. Bennett (Rapid Bay) moved, "That the Impounding Act to be amended to give district councils the same power as corporations to deal with and prevent the grazing of stock on roads." Mr. R. Chambers (Rapid Bay) seconded and the motion was carried.

TOP DRESSING.

Mr. L. V. Rust of the Brinkley Branch in the course of a paper dealt with the subject, "Top Dressing," said that to illustrate his remarks, he proposed to instance a holding of 1,500 acres of cleared land in a mallee district. In planning cropping operations he would have to consider what area of land could be fallowed and leave sufficient for grazing purposes for stock, which it could be assumed would consist of 15 horses, a few cows, and 150 sheep. Under ordinary circumstances, 500 acres would be required for feed. To make that portion of the farm more profitable, he suggested top dressing 200 acres, after which it should be possible to carry 250 sheep, for an outlay of about £24 worth of 45 per cent. super. His experience in a district with a 14in. rainfall on sandy soil proved that that was sufficient to justify top dressing early in the season. Mr. W. J. Spafford (Superintendent of Experimental Work) said in South Australia soils were deficient in phosphoric acid, yet landholders expected their fields to produce good grazing plants without the assistance of fertilisers. It was just as essential to apply fertilisers to the pastures as to any other crop. The experience of the department had been that where there was a rainfall of 18in. or over, reasonable applications of phosphatic manures to pastures, doubled the carrying capacity of the land. Mr. Higgins said he had used about 35 tons of super for top dressing in the hills, and if it increased his carrying capacity by half a sheep to the acre he would be more than satisfied, because it would be a good paying proposition. There was no doubt about the effect of super on grass lands, because a marked difference was noticeable in a few months.

PLANTING TIMBER TREES.

Mr. J. P. Colebatch, of the Port Elliot Branch, contributed a paper, "Planting Timber Trees." Millions of pounds, he said, were sent overseas every year to purchase timber. Red Gum was acknowledged to be the finest timber for pile driving and it was also splendid for building purposes. Jarrah in Western Australia and kauri in New Zealand were becoming very scarce and these trees should be planted in parts of the State where climatic conditions and rainfall were suitable. Hickory was unsurpassed as a timber for buggy work, &c., and an effort should be made to plant trees of that variety. An acre plantation of *Pinis insignis*; 800 trees planted 7ft. apart, would make a splendid insurance policy for the children of the man on the land. Such an area, after being thinned out, would carry 400 marketable trees, valued at £3 each, in 30 years, as the result of an outlay of about £140. Pines should be planted around orchards and would serve as

shelter for the trees and eventually the timber could be utilised for packing cases. Mr. W. Yelland (Milang) referred to the value of trees as a shelter for stock and provision for firewood, which in many districts at the present time were very pressing matters.

SOIL FERTILISATION

Mr. E. R. Heath, of the Rockwood Branch, read a paper, "Soil Fertilisation," in which he referred to the importance of applying suitable fertilisers to the soil in South Australia. Of late it had been frequently stated by farmers that super was "losing its magic," but such was not the case. The grade of super in South Australia to-day was better than it had ever been before. It was cheaper than in any other country of the world. The farmer who was not able to secure good results by super should obtain advice on the matter of applying an additional fertiliser. Stable manure was available on nearly every farm and that, he thought, could be utilised to the best advantage in the garden and small green feed paddocks. Top dressing in 10 years' time would be the rule rather than the exception, and the man who did not top dress his pastures, would be regarded in a similar manner to the farmer who still refused to use super for his crops.

WHEAT CULTIVATION.

Mr. T. B. Ness (Milang) in the course of a paper dealing with the subject, "Cultivation of Wheat," said wheat growing in South Australia could not be regarded at the present time as a very flourishing industry. The area under that crop during the last year was considerably less than the area cropped 10 years ago. With wheat at 4s. per bushel, it was necessary for the farmer to get a good average return in order to make ends meet. The only solution seemed to be that the farmer should strive to obtain maximum returns from every acre. To do that, thorough and skilful cultivation, and the preparation of a good seed bed were most essential. If land was fallowed early it could be left until after the winter months and then worked down fine in September. If, however, ploughing was not done until September, the land should be immediately harrowed and cultivated at intervals to keep weeds in check, and prevent a hard crust forming on the surface. Growing peas in place of bare fallow was gaining favor in some districts, but in his district (Milang) that practice had several disadvantages. In the first place, climatic conditions were not suitable and there was no doubt that a crop of peas increased the growth of weeds. Wheat should be sown from 1st of May until about the second week in June, with 45 per cent. super applied at the rate of 1 cwt. per acre. For that district, he favored early and mid-season varieties. The crop should not be harvested until the grain was thoroughly ripe, after which, the sooner it was taken off the better.

A short address dealing with the feeding of dairy cattle was delivered by the Government Dairy Expert (Mr. P. H. Suter).

It was decided that the next conference should be held at Second Valley in 1925.

ADVISORY BOARD OF AGRICULTURE.

The monthly meeting of the Advisory Board of Agriculture was held on Wednesday, August 13th, there being present:—Mr. W. S. Kelly (Chairman), Capt. S. A. White, Messrs. George Jeffrey, F. Coleman, L. Cowan, B.Sc., W. J. Colebatch, M.R.C.V.S., C. A. Loxton, B.V.Sc., P. H. Jones, C. J. Tuckwell, H. Wicks, H. S. Taylor, J. W. Sandford, A. B. Feuerheerdt, and H. J. Finnis (Secretary).

Apologies were received from Professor A. J. Perkins and Col. Rowell.

Protection of Trees on Roadsides.—At a previous meeting of the Board the following resolution was carried:—"That in the opinion of this Board, it is desirable that all trees growing on the side of any road not being on private land should be subject to the control of the Forest Department, whether or not moneys have been contributed out of the public revenues to the planting of such trees, and that it should not be lawful for any person or public body under any circumstances to cut down, damage, or remove any such tree, except under the authority of a permit generally or specially issued by the department to such person or public body." On the motion of Mr. H. Wicks, seconded by Mr. F. Coleman, it was decided that the matter should be referred to the Minister with a request that it might be brought under the notice of the newly appointed Forestry Committee.

Lectures on Bee Culture.—The Secretary was instructed to take steps to secure the services of Mr. C. Harris for the purpose of delivering lectures to Branches of the Agricultural Bureau.

"Take-all" Eradication.—A report from the Lecturer in Plant Pathology at the University, dealing with an offer from Mr. Heithersay to demonstrate the effectiveness of a formula for the eradication of "take-all" was read by the Secretary. After discussing the report, it was resolved that the Secretary should inform Mr. Heithersay that the Board did not consider it advisable to ask the Government to expend £20 to defray the cost of a demonstration, but thought that the suggested remedy could be tried on a small scale without any expense.

Experimental Station on Murray Swamp Lands.—The 1924 Conference of River Murray Branches resolved—"That an experimental station should be established on a reclaimed area of the River Murray." The motion was submitted to the Minister of Agriculture, who did not approve of the adoption of the resolution.

Appointment of a Plant Breeder.—The Conference of Upper Northern Branches resolved—"That a plant breeder be appointed to the staff of the Department of Agriculture." On the motion of Mr. H. S. Taylor, seconded by Mr. G. J. Tuckwell, it was decided that

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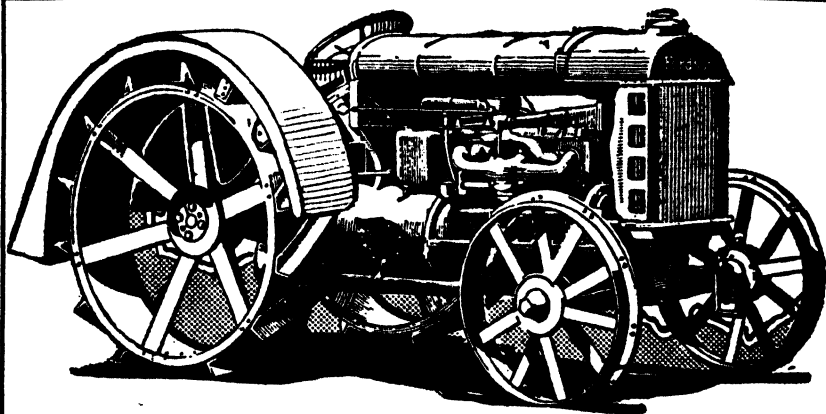
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the attention of the Minister be drawn to the matter, the Board being in agreement with the suggestion, and considering that the case could be cheaply, economically, and effectively met by the appointment of a junior assistant to Mr. Scott at the Roseworthy Agricultural College.

Forestry Advisory Board.—Mr. F. Coleman moved and Capt. S. A. White seconded, "That this Board recommends the appointment of a Board of Forestry to act as an Advisory Board to the Minister controlling Forests and the Conservator of Forests." The motion was supported by Messrs. H. S. Taylor, J. W. Sandford, A. B. Feuerherdt, and G. Jeffrey, and carried unanimously.

Winter School at Roseworthy Agricultural College.—The Chairman (Mr. W. S. Kelly), supported by Mr. G. Jeffrey, congratulated Mr. W. J. Colebatch, the Principal, on the very successful Winter School for Farmers that had recently terminated at the Roseworthy Agricultural College.

Rural School for Women.—The Secretary was instructed to ascertain whether the Government had made any decision regarding the holding of a rural school for women.

Notice of Motion.—Mr. H. S. Taylor gave notice of motion that at the next meeting of the Board he would move, "That the Government be asked to proclaim unalienated red gum and box gum flats adjacent to the River Murray as Forestry reserves; the same to be placed under the control of the Forestry Department, to be administered primarily in the interests of the Irrigation Settlements."

Next Meeting.—It was decided that the next meeting of the Advisory Board should be held on Monday, September 8th.

New Branches.—Approval was given for the formation of Branches at Stirling, Coult, Alma, Murray Town, with the following gentlemen as foundation members:—Stirling—Messrs. P. Probert, W. E. Halliday, W. Hocking, W. J. Davis, A. Gander, H. E. Mountford, G. Noble, N. H. Oldfield, G. Carroll, M. Bilney, D. D. Smith; Coult—Messrs. L. Morgan, D. T. Morgan, W. J. Doudle, L. J. Myers, S. Carrick, W. Doudle, J. W. Kennett, H. Puckridge, A. G. Hams, A. A. Puckridge, R. W. Doudle, J. J. Doudle; Alma—W. Kuhlmann, L. Pillar, P. McD. Smythe, J. Freebairn, A. Freebairn, J. Painter, E. Kelly, P. Kelly, W. Brown, R. McKenzie, A. and A. S. Shepherd, W. Barclay, O. Murphy, F. Blight, O. Horgan, F. Smith, E. Watts, J. Schwerdt, A. Schwerdt, C. Blight, A. Smythe, L. Smythe, H. Smythe, A. Harkness; Murray Town—Messrs. H. H. L. Morgan, W. Schultz, F. Tregenza, G. Fisher, C. Phillis, L. Phillis, B. Starr, F. Schultz, J. Nottle, O. Reichstein, G. Jackson, G. Christianson.

Branches to be Closed.—It was decided to close the Parrakie, Myponga, Meningie, and Moorlands Branches.

Life Membership.—The names of Messrs. W. E. Hier (Yadnarie), D. A. Collins (Mount Gambier), and H. T. Torr (Redhill) were added to the list of life members of the Agricultural Bureau.

New Members.—The following names were added to the rolls of existing Branches:—Rockwood—E. B. Inglis; Strathalbyn—R. Sissons, J. J. Bradford; Kangarilla—R. Durrant, C. Smart, R. Golder, L. Golder, W. Olpin; Mannanarie—C. Ramsey, T. Bain; Kybybolite—J. Heffenan, E. S. Alecock; Blackwood—C. Fletcher; Rudall—E. James, P. Crabb, W. Crabb; Aldinga—D. Eatts, A. C. Cliff; Warcowie—R. Sanders; Gulnare—J. L. Noonan, J. N. Roberts, D. Murphy, B. Harding, A. S. Badman, A. P. Syme, H. Burgess, M. M. Sexton, J. Collins, H. J. McPherson, L. Wellington, K. Belcher; Paskeville—R. S. Norris; Brinkworth—R. D. Adams, B. F. Waldbuter, J. Horne; Berri—J. L. Wishart; Netherton—W. Weber, D. T. Croft, C. Halls, J. S. Harvey; Monarto South—J. H. G. Paech, J. T. O. Paech, G. Nicholls, J. English; Wirrabara—H. C. Jaeschke, D. McKeand; Kilkerran—V. Clasholm; Yandarie—R. Vincent, C. Burford, E. J. Hier, W. G. Hier, O. L. Stubing; Yeelanna—W. C. White, C. Farrell, H. Karran; Lenswood and Forest Range—L. Hale, W. Hale, R. Muir, A. T. George; Mount Bryan—D. Horne, D. Woods, H. Joseph; North Booborowie—H. B. Mudge; Rendelsham—A. Clark, A. Guerin, A. Campbell; Salisbury—E. Chapman, W. F. Prettyjohn; Taplan—P. Burridge, R. Prentice, H. Muller, F. Moffatt; Block "E"—W. H. Eaton, R. K. Rhodes, L. W. Moss, W. B. Anderson, S. W. Coombs, H. S. Smith, W. A. Wells; Talia—W. Magin, G. Hill, C. Marks; Light's Pass—W. Kurtz, E. Bogner, J. Shraepel, F. W. Roenfelt, A. H. Scholz, A. Stead; Brentwood—E. E. Correll, G. L. Sawyer, P. W. Watters; Shoal Bay—C. A. R. Turner; Kalangadoo—T. Hemmings; Mount Barker—W. Orr; Hartley—D. C. Harvey; Green Patch—D. Murray, T. Murray; Mundalla—C. Truelove, A. V. Saxon; Coonalpyn—E. Cooley; Weavers—P. Bull, E. E. Natt, H. Friedrichs, H. H. Bromley, A. Page, J. R. Young, G. T. Anderson, E. Jolly, H. A. Baker; Tweedvale—J. H. Boerth, J. L. Mines, H. F. A. Thiele, C. F. A. Brettig, J. H. W. Kramer, E. P. Kunnick, J. G. H. Sickerdieck, A. B. Klau, W. Polland, H. Gerhardy; Riverton—W. J. Dalby; Carrow—H. Bates, A. Quinn; Lone Pine—G. Haese, W. Hamann, E. Bogner, H. Helling, J. F. W. Schulz, H. Basedow, C. Helling, P. L. Lehmann, R. Yimmel, G. Otto; Yacka—S. S. Larwood, G. Pedler; Rameo—L. Jones; Streaky Bay—J. O'Connor; Lake Wangary—V. Wright, R. P. Puckridge; Gawler River—M. Hillier, A. Toll; Black Springs—A. Oram, L. Abbott, R. Hatfield, A. Shearman; Whyte-Yarcowie—W. Webster; Rapid Bay—G. Bennett, B. Roper; Windsor—N. Williams, M. Williams, C. Everett; Collic—S. Smith; Petina—H. L. Hughes; Clarendon—A. March, R. Wright; Willowie—G. H. Bull, G. C. Michael, E. A. Jacka, M. H. McMartin, L. C. Brooks; Virginia—A. H. King, A. Osmond, M. Maloney, S. J. Johns; Laura—C. Amey, J. Hamuil; Blackheath—C. Fletcher; Tatiara—J. Smith, W. Campbell, L. E. Vercoe; Poochera—O. D. Lubeke; Frances—N. McKinnon, R. Campbell, W. Williams, W. J. Montgomery.

ORCHARD NOTES FOR SEPTEMBER.

[By C. H. BEAUMONT, Orchard Instructor.]

All ploughing should be completed and trees cleaned around; do not allow soil to become heaped up about the trees, this is especially essential with apple trees; at times the soil becomes so high that a secondary system of roots is formed, and the blight resistant stock is of no avail.

Clear out all cuttings and rubbish; they are a source of infection. Fertilisers should be spread about the trees if necessary, from 4lbs. to 10lbs. per tree according to size, hoed or ploughed in. Bone dust or complete manure should be used.

Finish the planting of citrus trees and give a watering if there is no rain about.

Spraying will be the main work of the month and the next month. First we have to deal with preventing fungus diseases. For this purpose the very best fungicide we have is Bordeaux mixture, freshly made where it is to be used. Fresh clear bluestone crystals, and freshly burned lime are the ingredients. If you are in doubt about how to make it, send in for the instructor for your district and he will show you. This mixture is to prevent the scab of apple, scab or shot-hole of apricot, and curl leaf of the peach and nectarine. The time to apply is just before the buds are fully burst; if you value your crop, do not let any other work put the spraying astray; good material must be applied at the right time, to get the best results.

Peach aphid will also require attention and will probably take several sprayings. Black leaf 40 is the best thing we have at present. The spray must be used as often as the insect appears; it can be mixed with the fungicide and is always more effective when a spreader is added.

Apple trees must be watched and given their first spray for codlin before the calyx closes. Arsenate of lead (powder form) is the best remedy. The same material in double strength is also used for cutworms which attack vine cuttings or young vines transplanted; watch for them; they seldom need more than one dose.

Grafting should be completed. Where big limbs have been removed, protection from the sun will be necessary.

Fruit in cool store needs frequent attention.

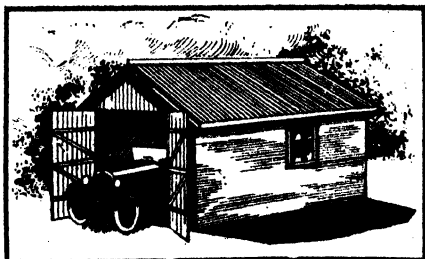
It will be well if fruit growers and vignerons give the best of attention to the business of spraying; to get good prices we must supply good fruit, we cannot do this without the greatest of care; spraying is a nuisance we admit, but the necessity for it has been brought about by our own carelessness, and diseases are still being stupidly spread about to increase the work of others. South Australian growers

are fortunate in the few pests they have to deal with, when compared with other States and with other parts of the world. In many parts careful experiments have been made with a view of getting the very best results from the spray and work necessary. The use of "spreaders" has been recommended to help the efficiency of the materials used; the cost is small and the labor not increased. Mr. deCastella has spoken very definitely about the casein spreader for use with Bordeaux in spraying of vines for prevention of "Downy Mildew"; there is not the slightest doubt of the increased efficiency in this respect; others have demonstrated its success when using arsenate of lead for the treatment of codlin moth and of other biting insects; I am so satisfied with the genuineness of these claims that I do not hesitate to recommend this idea to our growers.

The Farmers Bulletin 1326, U.S.A., contains some good illustrations of the use of spreaders and they are here reproduced. It must not be thought that a spreader will correct bad work or pull the material to a part of the fruit or foliage where the spray has not been directed, but it will give an even surface to the material and will not leave any clear places for the pests to get a start upon; it is the better distribution that matters. There are several materials used as spreaders, wheaten flour, glue, and soap, but the best of all is casein. It is produced in South Australia as a bye product of creameries.

To dissolve the casein we must have an alkaline solution, therefore, some caustic soda will be wanted. It is not good to make a lot at once as it does not keep well. Try the following formula:—Water, 1gall., caustic soda, 3ozs., casein (fine), 1lb.; one pint of mixture to 100galls. Bring the water to the boil, add the caustic soda and dissolve it, then stir in the casein and stir well while dissolving. Use as above.

Strawberry mildew must be stopped with powdered sulphur or lime sulphur solution, 1½galls. in 100galls. of water.



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IMPORTS AND EXPORTS OF FRUITS, PLANTS, ETC., JUNE, 1924.

IMPORTS.

Interstate.

Apples (bushels)	122
Bananas (bushels)	7,893
Oranges (bushels)	3
Passion fruit (bushels)	567
Pineapples (bushels)	521
Cabbages (packages)	1
Cauliflowers (packages)	6
Swedes (packages)	2
Potatoes (bags)	20,195
Onions (bags)	635
Bulbs (packages)	3
Plants (packages)	20
Trees (packages)	40
Wine casks, empty (number)	4,635

Fumigated—100 wine casks, 18 packages trees.

Rejected—1 bush. bananas, 3 bush. oranges.

Overseas.

Federal Quarantine Act.

3,069 packages seeds, &c.

EXPORTS .

Federal Commerce Act.

2,209 packages citrus fruit, 2,030 packages other fresh fruit, 56,035 packages dried fruit, 5 packages preserved fruit, and 3 packages plants were exported to overseas markets. These were consigned as follows:—

London.

Dried fruit	52,849
Citrus fruit	2,042

India and East.

Dried fruit	43
Apples	2,030

New Zealand.

Dried fruit	775
Preserved fruit	5
Citrus fruit	155
Plants	3

South Africa.

Dried fruit	780
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Glasgow.

Dried fruit	1,548
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Germany.

Dried fruit	40
Citrus fruit	12

TAXATION TIME IS HERE!!

All Income Tax Returns for the 12 months ended June 30th are now due.

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**I. GOLOSKY, A.C.U.A., A.A.I.S.
(Late of State Taxation Dept.)**

**A. SAIDE, A.F.I.A., Secretary
(Late of Federal Taxation Dept.).**

DAIRY AND FARM PRODUCE MARKETS.

A. W. Sandford & Co., Limited, reported on September 1st, 1924:—

BUTTER.—Since our last report it is pleasing to state that the dairying districts have received good rains, which will be very beneficial in production; in fact, substantial increases in the quantities coming forward have been noticeable during the last few weeks. Several fluctuations in values have occurred owing to the variation in London prices, and at the close of the month values were as follows:—Choicest factory and creamery fresh butter in bulk, 1s. 5½d.; first grade bulk, 1s. 4¾d.; second and third grade bulk, 1s. 3d. to 1s. 3½d.; best separators and dairies, 1s. 3½d. to 1s. 5½d.; fair quality, 1s. 2½d. to 1s. 3d.; store and collectors', 1s. 0¾d. to 1s. 2½d. per lb.

EGGS.—Supplies coming forward have been increasing weekly, and during the period under review interstate and local pulpers and picklers have been operating extensively and clearing all available stocks. Values at present are firm at:—Fresh hen, 1s. 1d.; duck, 1s. 2d. per dozen.

CHEESE.—The South-Eastern factories are consigning fair-sized parcels weekly, and with the good local demand existing steady clearances have been affected, whilst some interstate trade has been done, especially with Western Australia, for new makes. The present prices being:—New makes, 9d. to 10d. per lb. for large to loaf; semi-matured and matured large and medium sizes, 10d. to 11d. per lb.

HONEY.—Values have receded slightly owing to the considerable quantities of all grades that are now being placed on the market, so as to affect sales before the new season opens, with the result that the market is depressed, and an easier tendency is felt. Prime clear extracted in liquid condition, 5d. to 5½d.; best quality candied lots, 4½d. to 4¾d.; lower grades, 3d. to 3½d.; beeswax, 1s. 4d. to 1s. 4½d. per lb.

ALMONDS.—Values for this line have improved considerably during the month, due to the small consignments coming forward and the improved local and interstate demand. Brandis realising 9d. to 9½d.; mixed softshells 8d. to 8½d.; hardshells, 3½d. to 4d.; kernels, 1s. 8½d. to 1s. 9d. per lb.

BACON.—Values have been practically stationary, excepting middles, which have come back in price owing to an accumulation of stocks. With sides, rolls, and hams good turnover has been experienced, and present prices are:—Local hams, 1s. 5d. to 1s. 5½d.; best factory cured sides, 1s. 3d. to 1s. 3½d.; Hutton's "Pineapple" rolls, 1s. 3d.; Hutton's "Pineapple" sides, 1s. 3d.; Hutton's "Pineapple" middles, 1s. 7d.; Hutton's "Pineapple" hams, 1s. 8d. to 1s. 9d. per lb.

LARD.—Active demand at reduced prices, Hutton's "Pineapple" brand lard in packets, 10d.; in bulk, 9d. per lb.

LIVE POULTRY.—It is pleasing to report that supplies have increased, which were welcomed by the trade, as consignments of good-conditioned birds have been short for some considerable time. All lots participated in brisk demand, and throughout, most satisfactory rates were obtained for consignors. We advise consigning; crates obtainable on application. The following rates ruled at our last auction:—Prime roosters, 5s. to 6s. 9d. each; nice-conditioned cockerels, 3s. 6d. to 4s. 11d.; poor-conditioned cockerels, 2s. 9d. to 3s. 3d.; plump hens, 4s. to 6s. 6d.; medium hens, 2s. 9d. to 3s. 9d.; geese, 7s. 6d. to 8s. 6d.; ducks, good condition, 4s. 6d. to 6s. 3d.; do., fair condition, 3s. 6d. to 4s. 5d.; turkeys, good to prime condition, 1s. to 1s. 4d. per lb. live weight; do., fair condition, 9d. to 11½d. per lb. live weight; do., fattening sorts lower; pigeons, 11½d. each.

POTATOES.—Prime potatoes at 5s. 6d. to 7s. per cwt. on rail, Mile End.

ONIONS.—Best brown onions at 16s. per cwt. on rail.

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SIZES TO FIT ALL MAKES OF CULTIVATORS.

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THE AGRICULTURAL OUTLOOK.

REPORTS FOR THE MONTH OF AUGUST.

The following reports on the general agricultural condition and outlook of the areas represented by the Government Experimental Farms mentioned below have been prepared by the respective managers:—

Booborowie.—The weather for August has been unique, as good rains have been recorded, and mild, warm weather prevailed; 228 points of rain were registered up to the 28th instant. The crops are mostly looking remarkably well, and making rapid growth. Natural feed is not over abundant, but should make good progress after the recent rains, and the weather is mild. Pests—Rabbits are fairly numerous in places. Miscellaneous—Farmers are hurrying along with fallowing.

Turretfield.—Weather—This month has been dry, and frosts have been prevalent. A few dry windy days have been experienced. The rainfall for the month was 164 points. Crops are beginning to improve, but until the rain fell on August 12th they were looking very poor. Further showers are needed badly to keep the growth steady, otherwise they will run into ear too quickly. Natural feed has improved greatly during the last fortnight. Stock are beginning to improve, as the feed is of good quality, although not abundant. Miscellaneous—A considerable area is fallowed; vineyards are mostly pruned and ploughed.

MOUNT GAMBIER AND DISTRICT HERD TESTING ASSOCIATION

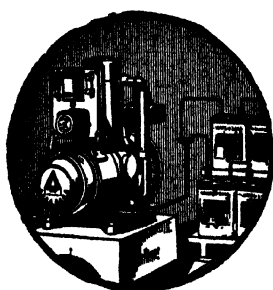
RESULTS OF BUTTERFAT TESTS FOR JULY, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during July.	Per Cow during July.	Per Cow August to July.	Per Herd during July.	Per Cow during July.	Per Cow August to July.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
2/A	12-06	3-06	2,720-5	225-58	5,106-02	141-29	11-72	217-59
2/E	12	5-03	1,508-5	125-71	6,447-24	64-11	5-34	273-74
2/H	22-16	15-84	11,532	520-39	6,779-57	485-34	21-90	275-89
2/I	13	7-32	4,604-5	354-19	6,768-74	232-03	17-85	276-41
2/J	12	6-19	1,617-5	134-79	8,032-58	92-01	7-67	334-86
2/K	25	11-84	8,092	323-67	6,105-67	343-62	13-74	239-84
2/L	21-13	15-03	6,328	299-47	4,984-88	321-66	15-22	229-73
2/O	29-03	20-55	16,655	573-71	5,445-55	652-03	22-46	213-37
2/R	16	11	11,154-5	642-20	10,716-94	501-89	29-18	431-97
2/S	6	4	4,107-5	684-58	8,550-02	203-80	33-97	394-96
2/T	11	8-06	5,113-5	464-76	8,131-65	208-93	18-99	314-94
2/U	17	8-64	7,395	435-00	7,206-88	324-47	19-09	287-48
2/V	22	10-90	4,976	226-18	4,443-51	233-95	10-63	183-64
2/W	16	13	11,423-5	713-97	8,875-17	440-74	27-54	333-15
2/Y	11	6-10	5,111	464-63	7,764-53	221-97	20-18	319-76
2/Cc	13	6-23	3,707	285-16	4,754-08	179-15	13-78	209-28
Means	16-15	9-55	6,627-91	410-43	6,735-22	280-44	17-98	270-94

GLENCOE HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR JULY, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during July.	Per Cow during July.	Per Cow October to July.	Per Herd during July.	Per Cow during July.	Per Cow October to July.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
3/A	18	12-74	8,712	484-00	6,906-05	357-98	19-89	294-78
3/B	16	4-61	1,152	72-00	3,162-24	61-26	3-83	139-45
3/C	11-06	8-87	7,272-5	657-54	6,358-60	301-60	27-27	260-92
3/D	11	8-35	3,970	282-61	5,483-78	159-72	11-42	212-77
3/E	14	8-94	4,490-5	320-75	5,583-69	216-84	15-49	244-07
3/F	9	5-35	3,806-5	422-94	5,096-41	156-88	17-43	211-80
3/G	12	6-90	3,325-5	277-13	5,068-79	150-51	12-54	219-23
3/H	16	8-13	4,668-5	291-78	4,471-61	191-90	11-99	175-88
3/I	14	7-42	2,651	189-36	4,867-21	137-18	9-80	208-79
3/J	17	9-97	2,912-5	171-32	3,487-62	135-05	7-94	159-53
3/K	22	14-61	7,931	360-50	5,115-54	328-32	14-92	218-41
3/L	24	13-84	10,279-5	428-31	4,538-81	440-70	18-36	189-10
3/M	11-90	8-90	3,192-5	268-27	4,127-86	139-00	11-68	179-23
3/N	17	12-29	6,713	367-48	4,775-39	290-49	15-83	207-49
3/O	17	6-68	618-5	36-38	3,886-80	29-06	1-71	148-62
3/P	15	5	1,286-5	85-77	2,933-94	63-26	4-22	117-40
3/Q	51-77	28-26	9,655	186-50	4,230-13	439-17	8-48	177-64
3/R	16	11-32	8,449-5	528-09	6,251-06	364-02	22-75	273-57
Means	17-37	10-12	5,060-36	291-26	4,783-63	220-16	12-67	201-12



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MILANG HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS, JULY, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during July.	Per Cow during July.	Per Cow May to July.	Per Herd during July.	Per Cow during July.	Per Cow May to July.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
4/A	25.65	22.65	13,019	507.56	1,516.10	573.98	22.38	65.66
4/B	40	26.19	17,003	425.08	1,094.73	590.18	14.75	37.11
4/C	27.97	20.48	7,423	265.39	942.94	296.54	10.60	38.05
4/D	22.16	17.97	20,403.5	920.73	2,084.54	805.73	36.36	78.10
4/E	20	18	11,253	562.65	1,555.46	464.42	23.22	58.12
4/F	20	19.87	8,563	428.15	1,186.20	362.46	18.12	51.39
4/G	27	19.68	10,964	406.07	1,066.88	456.10	16.89	41.50
4/H	26	16.58	11,568	444.92	1,096.84	493.83	18.99	46.06
4/I	24	16.87	9,162.5	381.77	1,017.64	433.00	18.04	42.68
4/J	50	23.61	14,600	293.20	634.47	516.14	10.32	21.01
4/K	16	15.48	6,987.5	436.72	1,184.72	318.90	19.93	52.64
4/L	36.84	28.68	11,684.5	317.17	1,022.28	527.36	14.31	46.24
4/M	22	16.81	9,345	424.77	972.79	342.46	15.57	36.59
4/N	43	36.55	29,903	695.42	1,626.18	1,185.73	27.58	62.53
4/O	42	40.03	32,228.5	767.35	1,948.75	1,286.88	30.64	76.84
4/P	53	21.84	11,879	224.13	449.14	462.60	8.73	18.07
4/Q	47.42	29.42	17,103	269.07	913.32	630.36	9.74	34.93
4/R	14.61	9.84	8,577	587.06	1,194.76	380.30	26.03	53.06
Means	30.99	22.25	13,984.80	451.41	1,152.25	562.61	18.16	45.53

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H. N. WICKS, Proprietor.

POSTAL ADDRESS—BALHANNAH, S.A.

RIVER MURRAY HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS, JULY, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during July.	Per Cow during July.	Per Cow October to July.	Per Herd during July.	Per Cow during July.	Per Cow October to July.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1/C	39-16	27-90	27,432-5	700-52	7,395-09	1,103-64	28-18	288-87
1/J	16	8-87	5,855	365-94	4,327-05	286-11	17-88	202-67
1/L	18	11-90	9,847	547-06	5,513-45	462-00	25-67	247-00
1/M	20	13-10	7,917	395-85	4,002-23	405-20	20-26	204-52
1/R	16	11-52	6,203-5	388-46	4,244-22	317-38	19-89	211-06
1/T	14	8-81	6,528-5	460-32	4,930-66	347-00	24-79	258-60
1/Y	11	7-48	5,367	487-91	5,837-61	256-22	23-29	268-29
1/Z	13	11	7,440	572-31	5,370-01	346-93	26-69	249-10
1/DD	24-68	18-97	14,461	585-94	5,640-66	611-91	24-79	246-08
1/EE	15	11-19	6,630	442-00	5,731-16	313-55	20-90	270-92
1/FF	14	10	7,874	562-43	5,794-99	314-05	22-43	247-90
1/GG	15-48	13-71	7,087-5	457-85	6,339-22	348-54	22-52	293-79
1/II	13	12-35	11,092	853-23	6,916-18	487-01	37-46	295-02
1/JJ	12	10-71	6,000	500-00	5,468-12	315-13	26-26	248-16
1/KK	13	11	7,641-5	587-81	5,795-73	318-90	24-53	254-92
1/MM	23-71	21-10	11,963-5	504-58	5,401-75	601-91	25-39	260-70
Means	17-38	13-10	9,333-74	537-14	5,550-96	427-22	24-58	248-84

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22, GRENFELL STREET ADELAIDE.

RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of and to the end of August, 1924, also the average precipitation to the end of August, and the average annual rainfall.

Station.	For Aug., 1924.	To end Aug., 1924.	Av'ge To end Aug.	Av'ge. Annual Rainfall	Station.	For Aug., 1924.	To end Aug., 1924.	Av'ge To end Aug.	Av'gs. Annual Rainfall.
FAR NORTH AND UPPER NORTH.					LOWER NORTH—continued.				
Oodnadatta	0.13	1.56	3.49	4.94	Spalding	2.54	12.55	13.39	20.27
Marree	0.51	1.98	4.01	6.07	Gulnare	2.92	15.42	13.10	19.36
Farina	0.37	1.79	4.61	6.66	Yacka	3.20	13.40	10.73	15.48
Copley	0.69	2.04	5.86	8.39	Koolunga	2.93	11.93	11.10	15.69
Beltana	0.91	2.00	6.13	8.97	Snowtown	1.90	10.78	11.39	16.07
Blinman	1.27	3.19	7.80	12.53	Brinkworth	2.93	11.97	11.15	16.30
Taroona	0.54	3.20	5.12	7.74	Blyth	2.58	13.34	11.80	17.03
Hookina	1.38	3.77	9.28	13.46	Clare	2.98	18.21	16.35	24.68
Hawker	1.74	4.80	9.04	12.92	Mintaro	3.42	16.03	16.54	23.57
Wilson	1.49	4.74	7.73	12.58	Watervale	3.23	18.18	17.44	27.54
Gordon	1.24	4.43	7.82	11.55	Auburn	2.72	13.50	17.08	24.35
Quorn	1.61	5.20	9.93	14.21	Hoyleton	1.80	10.25	12.28	17.91
Port Augusta	1.81	5.91	6.55	9.67	Balaklava	1.50	9.08	11.16	15.95
Port Augusta West	1.67	5.38	6.62	9.71	Port Wakefield	1.89	9.65	9.60	13.28
Bruce	1.36	4.37	7.22	10.77	Terowie	1.50	7.01	9.14	13.82
Hammond	1.63	5.49	8.12	11.91	Yarcowie	1.33	6.91	9.60	14.22
Wilmington	2.29	10.06	12.88	18.29	Hallett	2.27	11.97	11.09	16.49
Willowie	2.05	6.87	9.78	12.57	Mount Bryan	2.19	13.18	11.50	16.81
Melrose	3.81	13.30	16.65	23.40	Koorunga	2.68	12.14	12.47	18.09
Booleroo Centre	2.45	9.20	10.82	15.65	Farrell's Flat	2.71	12.16	13.28	19.00
Port Germein	1.81	8.16	8.81	12.89	WEST OF MURRAY RANGE.				
Wirrabara	3.66	12.31	13.43	19.78	Manoora	3.09	13.02	12.89	18.93
Appila	2.73	11.24	9.91	15.00	Saddleworth	2.58	12.08	14.84	19.78
Craddock	1.00	3.72	6.85	11.52	Marrabel	2.52	13.19	13.87	19.78
Carrieton	1.21	4.04	8.85	12.90	Riverton	3.33	14.94	14.63	20.79
Johnburg	0.98	3.98	7.31	10.91	Tarlee	2.62	12.88	12.47	17.93
Eurelia	1.30	4.78	9.28	13.54	Stockport	2.16	11.78	11.41	16.63
Orroroo	1.51	5.38	9.56	13.73	Hamley Bridge	1.83	12.01	11.58	16.59
Nackara	0.96	4.78	8.28	11.99	Kapunda	2.45	13.98	13.86	19.89
Black Rock	1.58	5.89	8.78	12.75	Freeling	2.08	11.04	12.52	17.99
Uoolta	1.59	4.15	8.11	12.04	Greenock	2.90	14.21	15.05	21.68
Peterborough	2.49	8.82	9.09	13.53	Truro	2.60	14.44	14.18	20.26
Yongala	2.64	9.58	9.79	14.58	Stockwell	2.54	14.31	14.13	20.32
LOWER NORTH-EAST.					Nuriootpa	1.88	10.76	14.71	21.00
Yunta	0.50	2.19	4.90	8.88	Angaston	2.41	14.16	15.83	22.53
Waukaranga	0.22	2.78	4.76	8.54	Tanunda	2.21	13.52	15.73	22.24
Mannahill	0.65	3.36	5.78	8.67	Lyndoch	2.73	16.20	16.40	22.93
Cockburn	0.59	2.83	5.56	8.31	Williamstown	3.65	16.69	20.14	27.48
Broken Hill, N.S.W.	0.97	2.88	6.80	9.98	ADELAIDE PLAINS.				
LOWER NORTH.					Mallala	1.84	12.04	11.80	16.72
Port Pirie	2.48	9.37	9.30	13.55	Roseworthy	1.95	12.00	12.17	17.35
Port Broughton	2.42	10.99	10.13	14.29	Gawler	1.93	13.64	13.54	19.11
Bute	2.41	11.01	11.38	15.78	Two Wells	1.76	12.56	11.45	18.68
Laura	3.70	12.07	12.57	18.26	Virginia	1.76	12.02	12.32	17.32
Caltowie	3.83	12.54	10.53	17.20	Smithfield	1.83	12.89	12.24	17.24
Jamestown	3.62	14.45	12.02	17.89	Salisbury	1.72	12.72	13.42	18.51
Gladstone	4.81	16.08	10.93	16.29	North Adelaide	2.02	18.62	15.46	22.37
Crystal Brook	4.69	15.32	10.99	15.95	Adelaide	2.13	15.73	15.26	21.08
Georgetown	3.20	15.86	12.80	18.55	Glenelg	1.52	13.05	13.42	18.45
Narridy	2.64	11.40	11.37	16.37	Brighton	2.46	14.09	15.46	21.37
Redhill	2.64	11.16	12.20	16.94	Mitcham	2.91	17.78	17.76	24.26
					Glen Osmond	3.24	18.96	19.06	25.94
					Magill	2.90	20.57	17.64	25.35

RAINFALL—continued.

Station.	For Aug., 1924.	To end Aug., 1924.	Av'ge To end Aug.	Av'ge Annual Rainfall	Station.	For Aug., 1924.	To end Aug., 1924.	Av'ge To end Aug.	Av'ge Annual Rainfall
MOUNT LOFTY RANGES.					WEST OF SPENCER'S GULF—continued.				
Testree Gully.....	2-88	20-37	20-26	27-77	Tumby.....	1-52	6-75	10-03	14-56
Stirling West.....	4-78	31-45	32-88	46-82	Carrow.....	0-96	5-18	9-53	14-42
Uraidla.....	4-83	31-15	32-95	44-23	Arno Bay.....	1-28	6-26	8-87	13-06
Clarendon.....	2-77	19-70	25-17	33-09	Cowell.....	0-95	4-50	8-00	11-63
Morphett Vale....	1-86	16-02	16-60	22-90	Minnipa.....	1-56	7-13	11-61	15-51
Noarlunga.....	1-74	15-00	14-94	20-41	Ungarra.....	1-74	8-34	—	—
Willunga.....	2-87	18-35	19-04	25-99	Darke's Peak....	1-56	7-85	—	—
Aldinga.....	2-30	14-45	14-99	20-44	Kimba.....	1-81	8-10	—	—
Myponga.....	3-12	19-00	21-72	29-80					
Normanville.....	2-28	15-90	15-36	30-70	YORKE PENINSULA.				
Yankalilla.....	2-36	15-90	17-41	23-31	Walleroo.....	1-81	10-06	10-38	14-15
Mount Pleasant...	3-36	15-75	19-64	27-28	Kadina.....	2-13	11-03	11-79	16-02
Birdwood.....	2-76	16-44	21-32	29-39	Moonta.....	1-93	11-59	11-34	15-35
Gumeracha.....	3-09	21-86	24-20	33-36	Green's Plains...	2-04	10-39	11-66	15-86
Millbrook Reservoir	3-55	24-30	27-61	36-21	Maitland.....	2-22	15-84	15-88	20-17
Tweedvale.....	3-65	24-45	26-10	35-65	Ardrossan.....	1-84	8-71	10-24	14-18
Woodside.....	4-42	21-89	22-77	32-20	Port Victoria...	2-34	11-96	11-41	15-50
Ambleside.....	3-84	22-99	25-11	34-82	Curramulka.....	2-01	11-71	13-31	18-20
Nairne.....	2-67	17-89	20-60	28-44	Minlaton.....	2-22	12-10	13-27	17-90
Mount Barker.....	3-14	19-66	20-44	31-30	Brentwood.....	1-92	10-59	11-47	15-83
Echunga.....	3-27	21-20	23-99	33-06	Stansbury.....	1-60	11-41	12-39	17-01
Macclesfield.....	2-86	17-95	22-74	30-65	Warooka.....	1-92	10-58	13-38	17-80
Meadows.....	3-20	24-57	25-93	36-19	Yorketown.....	1-76	10-07	12-69	17-24
Strathalbyn.....	2-04	12-82	13-59	19-37	Edithburgh.....	1-23	8-93	13-24	16-58
MURRAY FLATS AND VALLEY.					SOUTH AND SOUTH-EAST.				
Meningie.....	1-56	14-11	13-62	18-74	Cape Borda.....	1-94	15-10	19-70	25-08
Milang.....	1-48	9-11	10-97	15-45	Kingscote.....	1-67	9-53	14-33	19-04
Langhorne's Creek	1-15	10-56	10-12	14-77	Penneshaw.....	2-19	10-89	13-63	19-47
Wellington.....	1-53	10-99	9-87	14-80	Victor Harbor....	1-95	11-87	15-46	21-49
Tailem Bend.....	1-60	11-69	9-91	14-68	Port Elliot.....	2-01	12-15	14-43	20-12
Murray Bridge....	1-55	9-28	9-48	13-94	Goolwa.....	2-11	10-43	12-75	17-89
Callington.....	1-45	9-45	10-73	15-49	Mindarie.....	1-84	8-71	—	—
Mannum.....	1-04	7-21	7-98	11-66	Alawoona.....	1-11	7-40	—	—
Palmer.....	1-51	7-15	10-45	15-46	Karoonda.....	1-56	9-88	—	—
Sedan.....	1-26	7-25	8-39	12-27	Sandalwood.....	1-54	8-76	—	—
Swan Reach.....	1-03	6-35	7-25	11-06	Meribah.....	1-08	7-41	—	—
Blanchetown.....	0-96	5-01	6-75	10-09	Pinnaroo.....	2-13	9-78	10-51	15-50
Eudunda.....	1-70	8-56	12-05	17-51	Parilla.....	2-51	9-57	9-68	14-51
Sutherlands.....	0-73	5-63	7-46	11-20	Lameroo.....	3-30	13-99	10-75	16-32
Morgan.....	0-66	4-93	5-95	9-30	Parrakie.....	1-62	9-78	9-64	14-58
Waikerie.....	0-60	5-69	6-53	9-87	Geranium.....	1-86	11-40	11-19	16-62
Overland Corner...	0-36	4-20	7-11	11-03	Peake.....	1-72	13-43	11-34	16-73
Loxton.....	0-83	6-11	8-33	12-50	Cooke's Plains...	1-70	13-41	10-40	15-14
Renmark.....	0-49	4-74	7-01	11-06	Coomandook.....	1-66	13-53	12-07	17-49
Monash.....	0-81	5-70	—	—	Coonalpyn.....	1-75	14-59	12-65	17-40
WEST OF SPENCER'S GULF.					Tintinara.....	1-58	12-65	12-80	18-70
Eucula.....	0-22	3-09	7-33	10-01	Keith.....	1-47	11-92	12-33	18-22
White Well.....	0-45	4-50	6-49	9-20	Bordertown.....	1-70	12-68	13-12	19-39
Fowler's Bay.....	0-64	5-54	9-49	12-14	Wolsely.....	1-79	12-70	12-25	18-12
Penong.....	1-75	9-02	9-68	12-53	Frances.....	2-38	13-46	13-27	19-73
Ceduna.....	1-38	5-90	6-44	10-25	Naracoorte.....	2-45	15-20	15-55	22-25
Smoky Bay.....	1-64	6-24	9-31	10-98	Penola.....	2-97	13-92	18-32	26-26
Petina.....	1-77	6-84	9-52	12-95	Lucindale.....	2-61	17-24	16-46	23-00
Streaky Bay.....	1-47	7-48	11-34	18-07	Kingston.....	3-17	17-49	18-10	24-51
Talia.....	2-13	9-00	11-27	15-32	Robe.....	2-96	15-05	18-78	24-69
Port Elliston.....	1-81	9-72	12-78	16-56	Beachport.....	2-51	14-92	20-86	27-20
Cummins.....	1-94	8-07	15-22	18-56	Millicent.....	3-42	20-84	21-85	29-39
Port Lincoln.....	1-27	9-24	13-69	19-66	Kalangadoo.....	3-58	21-76	23-06	32-47
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Borrika	*	—	—	Ki Ki	*	—	—
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Clanfield	*	—	—	Light's Pass	180	15	9
Clare	A.M.	—	—	Lipson	*	13	11
Clarendon	194	—	—	Lone Gum and Monash	*	10	8
Claypan Bore	*	10	15	Lone Pine	*	—	—
Cleve	*	10	8	Longwood	†	—	—
Collie	*	—	—	Loxton	†	—	—
Colton	*	26	31	Lucindale	*	—	—
Coomandook	188	10	8	Lyndoch	†	11	9
Coonalpyn	191	12	10	McLachlan	183	—	—
Cradook	*	—	—	McLaren Flat	*	—	—
Crystal Brook	*	13	11	MacGillivray	*	9	7
Cungena	*	—	—	Maitland	*	11	9
Currency Creek	*	12	10	Mallala	†	15	20
Cygnat River	*	11	9	Maltee	†	12	10
Darke's Peak	*	13	15	Mangalo	*	—	—
Denial Bay	*	—	—	Mannanarie	†	11	9
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Eurelia	†	3	1	Milang	*	6	11
Farrell's Flat	†	12	10	Millicent	†	5	3
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Moorak	*	11	9	Saddleworth	†	12	10
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* No report received during the month of August. † Held over until next month.
A.M. Annual Meeting.

THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

Every producer should be a member of the Agricultural Bureau. A postcard to the Department of Agriculture will bring information as to the name and address of the secretary of the nearest Branch.

If the nearest Branch is too far from the reader's home, the opportunity occurs to form a new one. Write to the department for fuller particulars concerning the work of this institution.

REPORTS OF BUREAU MEETINGS.

UPPER-NORTH DISTRICT.

(PETERBOROUGH AND NORTHWARD.)

WEPOWIE, August 11th.—Several subjects, including "Crop Competitions," "Distribution of Trees," and "Annual Congress," were brought before the meeting, and an interesting discussion took place.

MIDDLE-NORTH DISTRICT.

(PETERBOROUGH TO FARRELL'S FLAT.)

BRINKWORTH.

July 14th.—Present: 30 members and 12 visitors.

THE TRACTOR ON THE FARM.—Mr. H. E. Ottens, who read a paper dealing with this subject, said, after 16 months' experience with power farming, he was confident that the tractor would prove a success. He had found that during wet weather the land could be worked with the tractor under practically the same conditions as with horses. A tractor which could be purchased for £875, which was guaranteed to pull a 12-horse implement, and would do the work of two 10-horse teams. For seeding, he used a 12ft. combine, with harrows attached, doing up to 40 acres per day. The fuel, oil, and grease bill amounted to 10½d. per acre, and adding depreciation and wages, it would amount to 1s. 10d., whereas with horses the cost would be about 2s. 6d. Ploughing with a 10-furrow plough on stubble land, the expenses per acre were as follows:—Petrol (for starting purposes) 1d., kerosine 1s. 2d., oil 2d., heavy oil and grease 1d., depreciation and allowance for repairs 1s. 1d., and wages 9d., making a total of 3s. 4d. per acre. On stubble land a 10-furrow plough was rather a light load for the tractor, and the work would be done more economically with a 12-furrow plough. To do the same job with horses would cost 4s. 5d. per acre, distributed as follows:—Chaff, 2s. 6½d.; oats, 2d.; depreciation, 5½d.; and wages, 1s. 5d. For reaping, the tractor drew an 8ft. cut Sunlight header, taking off a total of 2,810 bags at a total cost of 5½d. per bag. Here also a larger machine would have reduced expenses considerably. When the exhaust manifold was placed on the top of the tractor, and the machine equipped with an efficient spark-arrester, danger from fire would be reduced to a minimum. The depreciation of chaff sheds and stables had not been included in the above comparison, neither was any allowance made for chaff fed to horses when they were not working, nor had the land which was left out for feed, which, in the event of no horses being on the farm, could be cropped every consecutive year, had been taken into account. A tractor in the hands of an inefficient driver would not be a very payable proposition, but the average farm youth of to-day was more of a mechanical than veterinary turn of mind, and if he took a special interest in engineering, he would soon be in a position to do all the repairs. In order to avoid the risk of losing time in busy seasons, it would be necessary to overhaul the tractor at least twice a year. The efficiency of the present-day kerosine motor could be judged from the following facts:—Up-to-date he had only lost four hours on one occasion and two hours on another, through

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On August 23rd, 1924—

**ACTUAL DELIVERIES
of New Rugby Passenger
Cars had been effected.
(Not including Commercial
Vehicles.)**

431

*and
we had*

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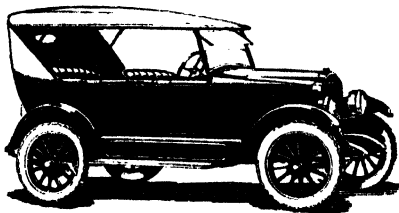
**Making a
Total of**

597

**ACTUAL DELIVERIES
of New Rugby Passenger
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(Not including Commercial
Vehicles.)**

**Unfilled Orders
in hand.**

**Orders for
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car design and equipment ever
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the engine refusing to start. The original set of spark plugs had been used until about a fortnight ago. The reason for putting in new ones was because the electrodes had been burned away, in some cases, right to the porcelain. Last seeding he had drilled in a total of 485 acres, and it was not necessary to clean the plugs once during that period. If conveniences were to be studied at all, the tractor was preferable to horses. There were no horses to be fed after tea, nor on Sundays, and there was also absolute freedom from bolting teams.

MOUNT BRYAN (Average rainfall, 15.83in.)

June 28th.—Present: Six members and four visitors.

QUESTION BOX.—The meeting took the form of a "Question Box." Mr. Wardle asked "Whether eight horses put in team, three, three, and two, would pull more than the same number worked abreast?" After a lengthy discussion it was agreed that the abreast team would pull the heavier load. Mr. Bryce asked, "Is it advisable to wait for rain during May before starting seeding?" Members decided in favour of pushing on with seeding and not waiting for rain. Mr. Bryce also asked, "Do members favor heavy dressing of super, say, 2cwt. per acre, and for light dressing, 75lbs. to the acre?" Members considered that a dressing of 90lbs. to the acre was sufficient for the bulk of the land in the Mount Bryan district.

NORTH BOOBOROWIE (Average annual rainfall, 16.35in.).

July 15th.—Present: Nine members.

THE FARM HORSE.—In the course of a paper dealing with this subject, Mr. H. B. Mudge said farmers were very lax in the attention bestowed on their horses, and the recent advent of tractors had made it necessary for the farmer to breed a type of horse that was suitable in every detail for farm work. It was better for the farmer to rear a foal or two each year in order to maintain the same standard of efficiency in his team, rather than obtain fresh horses when they were required, because when a horse was purchased in the sale yard, the buyer had no conception of the temperament or habits of the animal. The farm horse need not be so heavy as the horse used exclusively for road work, and for that reason, a horse similar in type to the Suffolk Punch or Percheron would be just as suitable for farm work as the Clydesdale and other such breeds. The first named were just as heavy in the body as the Clydesdale, but they were lighter in the legs, and they also had the advantage of having practically no hair on their legs, thus enabling them to work in boggy ground with much greater comfort than a hairy-legged horse. It was not advisable to break a draught horse into constant work until it was nearly three years old; if broken in earlier, the growth of the animal would probably be stunted. The colt should be treated kindly, but firmly, and one of the main points to be remembered when handling a horse, either whilst it was being broken in or afterwards, was that the animal should not be allowed to gain the upper hand. It was most essential that the young horse should have a well-fitting collar, otherwise sore shoulders would result. Farm horses should be fed regularly and well, and also provided with plenty of fresh water. It would also be found advantageous to give the working team a certain quantity of grain, say 7lbs. or 8lbs. of oats per horse daily. It was sometimes customary to work horses in various places in the team, but that should not be done, because a horse worked better if always worked in the same position.

TARCOWIE (Average annual rainfall, about 15½in.).

July 15th.—Present: 14 members.

AFFORESTATION.—Mr. W. H. Thomas, in the course of a paper dealing with this subject, first referred to the area under forest trees in different countries of the world, and then quoted extracts dealing with the effect of trees on atmospheric and climatic conditions. Whilst considering the subject of afforestation to be one of national importance, he also thought that individual landholders should do their share in planting as large an area as possible.

WHYTE-YARROWIE (Average rainfall, 13.91in.).

June 23rd.—Present: eight members and visitors.

IMPROVEMENT OF MERINO FLOCKS.—In the course of a paper dealing with this subject, Mr. G. McGregor said:—"The first step to take in improving a flock was to cull the ewes, or in the case of an intending breeder, it was better for the beginner to purchase cast aged ewes to found a permanent flock, providing they were reasonably sound; than to acquire breeders rejects. If possible, a fine day should be chosen to yard the flock for classing. It would be necessary to handle every sheep, but they should first be viewed at a distance, and the formation, constitution, and general carriage of the animals noted. Any sheep that appeared narrow or low in the neck, and in front of the wither, and those that showed "devil's grip," or bad legs, could be passed out without further inspection. If satisfactory to the eye, then the wool could be inspected. The following points of wool classing were desirable:—"Aim at having sheep with clean faces up to the eyes, wool soft to handle, of a bright colour, good crimp, good top, and free from kemp and hair. The fleece should be dense and long, and should be as even as possible all over the body. Concentrate on sheep with good wool on the back. Any animals with loose, open wool should be removed, also those with very short or rough and harsh wool." The breeder who culled consistently would improve the quality of the flock. In selecting a sire, the flock should be carefully reviewed and a note made of the weakest features that applied to the flock, so that a good all-round sire, strong in that particular weakness of the ewes would



transmit the desired quality to his progeny. If only strong robust sheep were kept, it should be quite safe to use the sire on at least the first generation of his own stock. In the purchase of a ram, the buyer should go to a breeder where the stock were reared under natural conditions.

WIRABARA (Average annual rainfall, 18.9in.).

July 12th.—Present: 17 members and visitors.

BREEDING LIGHT HORSES.—Mr. E. J. Stevens, who read a paper dealing with this subject, said there was not a more useful animal on the farm than the light, or knock-about, horse, but owing to the lack of interest given by breeders to that class of horse, many were but poor specimens of what the average farmer should possess. The sire was the most important factor in the breeding of a good hack, and he favoured the service of the blood stallion, or a sturdy small pony stallion. For a trolly or spring dray horse for the farm there was no better type than the progeny of the thoroughbred sire and the draught mare, but when breeding on those lines docility in the dam should be an important factor, because any vice in the dam would be increased by the infusion of blood from the opposite side. The blood sire could also be used on some of the best and quiet tempered light mares, and would result in a useful hack for a light weight; but for the majority of light mares the well-bred pony stallion was the most successful sire. A good type of light horse was a valuable asset, because any surplus animals would always command a ready sale.

BOOLEROO CENTRE, July 18th.—Mr. S. R. Cockburn attended the meeting, and delivered an address, "Top Dressing of Pasture Lands."

GEORGETOWN, July 16th.—The Honorary Secretary (Mr. W. Hill) read a paper from the *Journal of Agriculture*, "The advantages to be gained through a membership of the Agricultural Bureau."

REDHILL, July 22nd.—Mr. S. R. Cockburn gave an address, "Top Dressing of Pasture Lands," to a gathering of 18 members and eight visitors.

YACKA, June 14th.—Mr. A. A. Duffield read a paper, "Benefits to be derived from a membership of the Agricultural Bureau," and an instructive discussion followed.

LOWER-NORTH DISTRICT.

ADELAIDE TO FARRELL'S FLAT.)

BETHEL.

August 5th.—Present: 14 members.

HORSES v. TRACTOR.—The following paper was read by Mr. E. Vogt:—"Climatic conditions in Australia are particularly suitable for working the tractor. The tractor has many advantages over a team of horses, because it enables the farmer to dispense with the haystack, chaffcutter, engine, stables, harness, etc., and where a farmer crops 200 acres with a team of horses, he will be able to do about 400 acres with the aid of a tractor. When a tractor is employed, time is saved in not having to feed horses in the morning, dinner hours, and evenings. There is also the advantage of being able to do the work at a regular pace. A tractor, with its ability to perform a large amount of work in a short time, would be a valuable acquisition to a man working a farm single handed." An interesting discussion followed.

BLACK SPRINGS.

July 15th.—Present: 21 members.

CARE AND MANAGEMENT OF HORSES.—In the course of a paper dealing with this subject, Mr. C. Gilbert said the medium draught was the most suitable type of farm horse for the Black Springs district. The farmer could not expect good work from the horses if he did not feed them properly. Crushed oats and malt

barley, added to the chaff, would keep the horses in good condition. In busy seasons the team should be groomed every morning to remove all dry sweat. A colt should not be broken in under the age of $3\frac{1}{2}$ years. A well-fitting collar should be selected. The chains should be exactly the same length, so that an equal amount of weight would be on each shoulder. If the team consisted of more than seven horses, the animals should be worked "tandem." That brought the horses close to the implement, and they would not tread on one another. If the team was worked from sunrise to sundown, with $1\frac{1}{2}$ hours for dinner, they would have done a good day's work. Care should be taken not to jerk the reins, because the mouth of the horse was very tender and it encouraged the animal to throw up its head. On going into the stable when the horses were feeding they should always be warned, because the quietest horse could never

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be trusted. The tails of the horses should be trimmed every alternate year, at the beginning of the winter. When the horse had served a life of usefulness it should be destroyed, and not turned out to die.

THE COMBINE.—In reading a short paper dealing with this subject, Mr. O. Mann said no farmer should be without one of these implements, if he could possibly afford to buy one. If the fallow was in good order, and the weather suitable, seven horses would work a 16-hoc combine quite comfortably. If a light harrow and an extra horse was attached, then one man would be doing the work of three men.

WATER CONSERVATION.—A further meeting was held on August 21st, and in a paper dealing with this subject, Mr. J. A. Heinrich said a good supply of water on the farm was more important than reserve stacks of hay. For working horses, he preferred good well water to dam water. He recommended a small dam and pumping the water in from the well, giving the stock free access to it. The ground would absorb the magnesia and the water would always be fresh. Well water in a tank often became stagnant unless it was used frequently in large quantities. If a trough was used it should not be placed in the horse yard. A ball cock should be fitted in preference to a tap in order to keep the trough full. The trough should be thoroughly cleaned at least once a week. It was a good plan to give the trough a dressing of cement and linseed oil. The supply tank should be well tarred inside and cleaned occasionally. He did not favor the practice of stock coming in from the paddocks to water at the homestead. Every paddock should have a supply of water. If it was not possible to have water laid on from the homestead a dam could be excavated. The dam could, with advantage, be made to water two paddocks by running a fence across it. A fortnight's work with one team in good weather would put down a dam 8ft. deep and 22yds. by 28yds.

ROSEDALE.

June 18th.—Present: 14 members and two visitors.

The Manager of the Turretfield Demonstration Farm (Mr. F. E. Waddy) delivered an address "Improving Grass Lands."

CARE OF IMPLEMENTS AND MACHINERY.—A further meeting was held on July 16th. Mr. A. E. Carslake, who read a paper dealing with this subject said:—"Implements, when not in use, should be kept in a good shed to protect them from rain and sun. The harvester and binder should be thoroughly overhauled and all parts oiled twice a day, whilst the main parts should be oiled more frequently. It was also a good plan to occasionally overhaul the machines and screw up all nuts, because half an hour spent in that work would often save time and expense in getting the machine repaired. When seeding operations were finished, the drill should be thoroughly cleaned, because if super was left in the box it corroded the feeders. When the season was completed, each implement should be repaired before it was placed in the shed. Wagons, hay trollies, and other farm vehicles should be given a coat of paint every few years, to preserve the woodwork. The engine and chaffcutter should also be kept in good working order."

LIGHT'S PASS, July 17th.—An interesting discussion was aroused as the result of the tractor demonstration held on June 21st. The annual report was read by the Honorary Secretary (Mr. C. A. Verrall), and the officers were elected for the ensuing year.

SALISBURY, August 5th.—A discussion took place on several topics concerning the district. Arrangements for the forthcoming Annual Congress were also discussed.

TARLEE, July 14th.—The Wool Instructor of the School of Mines (Mr. A. H. Codrington) gave an address and a demonstration of wool classing to a gathering of 24 members and seven visitors.

YORKE PENINSULA DISTRICT.

(TO BUTE.)

BRENTWOOD.

July 17th.—Present: 14 members and visitors.

SHADE AND SHELTER.—Mr. H. Le Poidevin read the following paper:—"One of the most important items on a farm is provision of shelter for stock, especially if the land is open to bleak winter weather and hot summer winds. First, a shed should be provided for the working horses. For loose stock, sugar gums or pines should be planted in the paddocks. The plantation should be planted on the north-west and south-east side of every other paddock, and a few gums should be planted in some of the corners of the paddocks. The trees should be protected with a strong stock-proof fence until the tops of the trees are out of reach of the stock. When the trees have made a good growth, they should be topped. In after years the waste from such plantations would prove very useful for firewood and other purposes. Many farmers think the land is robbed of a certain amount of moisture when trees are planted, but a farmer cannot value the benefit the stock are receiving from the shade provided by trees." In the discussion that followed, Mr. A. L. Vanstone said that he had never realised the value of natural timber as a shelter for stock until he had taken his present farm, which was practically devoid of trees. Most of the scrub land provided fair pasture in spite of trees, and anyone taking up timbered land would be acting very foolishly if he destroyed all the timber. Most farms in the district had patches of natural timber, and these should be jealously guarded. Mr. A. Twartz had found ti-tree suitable for that locality, it being both useful for shelter and firewood. Of planted trees, he had found the "pepper" to make the finest shelter and breakwind. Pines were also useful, but he had obtained better success through rearing the young plants in tins from the seed, than from young trees obtained from other parts of the State. Mr. R. G. Anderson advised leaving the trees in small clumps, rather than single good trees, because the clumps seemed to thrive better, and were not so likely to be damaged as single, exposed trees.

KILKERRAN.

July 15th.—Present: 13 members and visitors.

LABOR SAVING HINTS.—In the course of a paper dealing with this subject, Mr. E. Heinrich said the first essential point in saving of time was thoroughness in the performance of all work that had to be carried out. The convenient situation of all buildings, improvements, and yards would be the means of saving a good deal of time, and many an hour could be saved by having the hay stacked close to the cutter. The tools of the blacksmith's shop should each be kept in a separate place. A small quantity of oils and grease should always be kept on hand, care being taken to see that all the implements were oiled regularly and thoroughly. During slack times of the year all machines should be overhauled, repairs effected, and implements placed in proper working order. Large implements were popular at the present time, and a 12-horse team was the limit so far as horses were concerned, but power-farming, he thought, would provide an opportunity for the employment of still larger machinery. A short discussion followed, and the officers were elected for the ensuing year.

ARTHURTON. July 15th.—The monthly meeting was held at Mr. W. Short's residence. Mr. M. Hyues read a paper, in which he recounted his experience of farming with a tractor and carting grain with a motor lorry.

WESTERN DISTRICT.

CARROW.

July 16th.—Present: 22 members and visitors.

SHEARING.—Mr. C. G. Puckridge, in the course of a paper dealing with this subject, said some forethought was required in laying out the sheep yards. A race and two small yards at the exit end of the race leading to two larger yards

should be provided. The yards should also be conveniently placed to the shearing shed. The conveniences of the shed should consist of plenty of space for the wool table, two bins for fleece wool, one for bellies, and one for pieces. A wool press should be used in every shed, because the more neatly the wool was baled, the higher price it realised. Grating for the floor of the shearing shed was one of the essential parts of a shearing shed. It should be built high enough from the ground to allow all droppings to fall through the grate and drain out of the shed. Prior to shearing, the sheep should be yarded, and all lambs tailed. That should be done at least six weeks before shearing to allow the wounds to heal. At the same time the sheep should be examined for flies, and all dags removed. When yarding for shearing, the flock should be classed, so that each type of sheep would be shorn separately. He advised shearing all dry sheep first, leaving the ewes and lambs until last. Hoggets should be drafted into a special line by themselves. After shearing, the sheep should be placed in a good clean pen or yard.

KOPPIO (Average annual rainfall, 22.40in.).

July 16th.—Present: 12 members.

BACON CURING.—Mr. W. R. Richardson, who read a paper dealing with this subject, first suggested that a wooden tray measuring 5ft. x 3ft., with sides about 4in. high, should be made, in order to save the liquor, and make the curing as economical as possible. The preparation for curing the bacon could be made as follows:—Mix equal quantities of medium coarse salt and dark sugar, and to every 1lb. of salt add 1oz. of saltpetre and 1oz. of carbonate of soda. The ingredients should be thoroughly mixed, allowing 4lbs. to 5lbs. of salt to a pig weighing 150lbs. dressed weight. After the carcass was cold, the hams and bacon should be removed and placed in a tray and sprinkled liberally with pure salt. The meat should be stacked and allowed to remain for 24 hours, the liquor then being drained off and thrown away. The meat, and especially the hams, should then be rubbed thoroughly with the mixture. After the first four or five days there would be no need to rub the bacon. It could simply be sprinkled each day with a little of the curing mixture, the bottom side of the meat being brought to the top. The bacon should be cured in from 12 to 15 days, according to the weight of the pig. The hams and shoulders should be rubbed and turned every day, care being taken to see that the liquor and salt mixture was thoroughly rubbed into the meat. They should be left for about three weeks to one month. When cured, the bacon should be placed in a tub and covered with hot water, allowed to remain in the water for 12 hours, then washed in clean water and hung up to dry. It would then require smoking for four or five days. He had used sawdust for smoking, and had done the curing in an old tank. Care should be taken to keep heat out of the tank, and the best plan was to have a pipe to carry the smoke into the tank. The election of officers for the year 1924-5 then followed.

LAKE WANGARY.

July 12th.

DESTRUCTION OF FOXES.—Mr. W. Shepperd read the following paper:—"If stock owners are to raise lambs successfully in this district it will be necessary for them to unite in their efforts to combat the fox pest. If dates for the simultaneous poisoning of foxes were arranged by Agricultural Bureaux and poisoning carried out extensively on those dates, the losses from foxes in the lambing season would be reduced to a minimum. Poisoning should be done during March and April, because natural foods are then scarce, and foxes readily take baits. Parrots or birds of any description treated with strychnine seem to give best results. If birds are not available, an old hen can be killed and cut into small pieces. Make a slit in each piece and treat it with a small quantity of strychnine, then press the flesh together, to prevent the poison from falling out. The trail should be dragged close to the fence so that the fox will scent it before reaching the flock. To distribute the poison, dig a hole with a hoe, put in a half, cover it over, and rub the drag over the spot, then lift the drag and proceed five or six yards before dragging it again. This method should be repeated until all the baits have been

distributed. If the strychnine is powdered finely, and a little carbonate of soda added to it, the poison will act more quickly and enable the farmer to collect the foxes before the skins become useless."

MCLACHLAN.

August 2nd.—Present: 17 members.

EARLY v. LATE SOWING.—A debate took place on this subject, in the course of which Mr. J. W. Hayman contributed the following paper.—"There are two periods of seeding generally observed by farmers, *i.e.*, early or dry, being approximately from April 1st to the middle of May, and late or wet, from the middle of May until the end of June. As this district is getting more settled, the advantages of wet sowing are becoming more pronounced. In the first place, one finds it necessary to wait for rain to plough the ground, which becomes harder and more set through continuous working. Better work is performed when the ground is wet, because the soil is then thoroughly cut and turned over, thus completely breaking the surface and preventing evaporation as well as conserving moisture. Also, instead of hindering or destroying soil bacteria, these are encouraged, thus increasing the nitrogen available to the soil, with a consequent increase in necessary plant food. This is also a great factor in the prevention of take-all, because dry working allows take-all to get a hold of, and thus destroy the crop, by killing the soil bacteria and lessening the amount of available nitrogen, so much so that farmers find it necessary to leave the fallows until a good rain falls. Then there is the question of weeds which are gaining headway, and which can only be prevented from choking the crop by leaving the land until the seeds have germinated, and then thoroughly turning them under the soil. The seeding operations being performed when the soil is wet, conserves most of the winter rains. The advantages of late sowing, therefore, are as follows:—Thorough cultivation, maximum conservation of moisture, increased fertilisation, minimum of weeds, and consequently greater returns. Of course, there are a number of disadvantages that have to be considered, and these are:—Lesser acreage and

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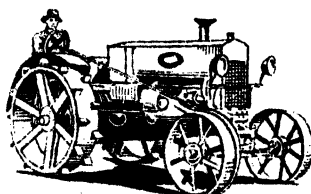
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amount sown per day. This, however, can be overcome by using up-to-date machinery. There is also the point of shorter growing period, but this is counterbalanced by the absence of weeds and choice of seed. The fact of requiring more seed and super cannot be considered, because if sown dry, similar quantities must be sown to combat weeds, and the fact of working wet more than compensates the extra fertilisation secured thereby."

EARLY v. LATE SOWING.—Mr. H. V. Dawson, in a short paper, said he was in favor of early sowing, because seeding would be completed early, and fallowing commenced without delay. Early sowing meant early maturity. For instance, wheat sown during the first week in May had an advantage over wheat sown during the first week in June, because it was stronger and better able to resist cold and frost, which were sometimes experienced in July. Crops sown early could be grazed off, thus providing early green feed for horses, and that was a great advantage when feed was scarce, and it also made the plant stool better. An early sown crop was generally past the flowering stage when hot winds prevailed, therefore the crop was not so likely to be damaged, whereas a late sown crop would probably be caught at the flowering stage, with disastrous results. Mr. W. E. Hawke favored early sowing, because the farmer could work practically twice the area of land per day in a dry March and April as he could in a wet June and July. While land was new and free from weeds the return per acre was just about equal, whilst the larger area handled tended to shorten the transitory period between "scrub block and mixed farming." June, July, and August were recognised as the best months for fallowing, and if the crop was sown during those months the teams would not be available for fallowing. It would therefore be necessary to leave fallowing, or else trespass on time that should be devoted to other work, such as fencing, bush cutting, stone and stump picking, and other recognised spring work. If one was fortunate enough to have fallow he would be able, by sowing new and stubble land dry and early, to put in the fallow in May, which was certainly the best month in South Australia. Horses also kept condition better, and were not so liable to sore shoulders.

MILTALIE (Average annual rainfall, 14.55in.).

July 12th.—Present: Eight members and visitors.

TRAINING A DOG.—The Chairman (Mr. F. Jacobs) read a paper dealing with this subject, in the course of which he said every stockowner should have a well-trained dog. When a good pup had been obtained, it should be tied up. A good plan was to have a wire or bar of iron fastened to two posts alongside the wall of a shed, or iron or paling fence, with the chain of the dog fastened to the wire so that the pup could run up and down for exercise. Children should not be allowed to play with the dog. When breaking in a young dog it would, in all probability, get tired of work and run home, but it should be brought back as a lesson not to run home again. The pup should be fed twice a day at regular hours whilst it was growing, but when full grown one good meal a day would be quite sufficient. Fresh drinking water should always be available. If the dog was to be of any value it would generally show signs of working intelligently whilst still young, and it should be given every opportunity of working stock. Patience should always be exercised when the sheep were being worked, and the dog should not be allowed to cross between the drover and the sheep. Many good sheep dogs were spoilt by allowing them to work cattle, because that was inclined to make them rough and work too closely to the stock. On no account should the dog be allowed off the chain. It would soon become accustomed to being tied, and would work all the better when taken out to the flock. It was a good plan to take the dog out whenever possible; the dog would appreciate that, and one of the main points in getting a dog to do good work was to gain the confidence of the animal.

POOCHERA.

August 6th.—Present: 13 members and four visitors.

SCRUB LOGGING.—Mr. J. McCormack contributed a paper on this subject. The main log, he said, should consist of three pieces of solid red mallee. The two pieces forming the ends should be sawn off at the butts and made to fit closely

together. They should vary in length according to the width of the log required, and measure about 10in. at the butts, and be so arranged as to form a bow with the ends of the logs about 5ft. in advance of the centre. He would tilt them up at the ends to a height of 3ft. from the ground. The rear log should be of tough red mallee for preference, with a bow in the centre in order to fit up to the other two logs. That piece should be not less than 12in. in diameter, and bolted at the back of the other two with four 1½in. pins—two on each side of the centre. For the frame, two pieces of 2in. iron or steel about 5ft. 6in. in length should be procured. An old axle of a reaper would serve very well. Those should be fitted into the rear log, one at each end, and made to lean towards the front. The frame could be bolted on to those pieces, bolting the centre piece first and then the two outside pieces. A piece of chain or wire rope should be fastened around the back of the log, and a half-hitch taken on each end about 15in. from the ground. The horses should be hitched to the loose end of the wire rope, and it would then always keep tight, and the log would not be so likely to break. He would use a six-horse team on each end of the log with a man for each team. Another person should go ahead and cut a track for the inside team and nick the large timber. The drivers should endeavor to keep the teams level and watch the log closely, and if a large clump of trees was towards one end of the log, one team should go ahead in order to meet the clump with the centre of the roller. In very heavy scrub he had been most successful with a 21ft. log cutting about 18ft., but in ordinary scrub he preferred a 25ft. log. For large trees that would not pull down, he suggested placing the chain through the fork, when the log could often be lifted by placing a stick against the tree about 4ft. from the ground. During the discussion which followed, Mr. McCormack said that log was far superior to the roller for clearing scrub.

ROBERTS AND VERRAN.

July 10th.—Present: 9 members.

COLT BREAKING.—In the course of a paper dealing with this subject, Mr. H. Smith said the best plan to adopt for breaking in young horses was to place the colt in a crush pen in the corner of a yard. A halter should then be placed on the colt so that it could see, because that helped to quieten the animal. In mousing the colt, a surcingle should be put around the girth of the horse, and then a short rope from the bit to the girth. The colt should then be made to go each way around the yard for three minutes. Next, a piece of rein should be fastened on one side of the bit, and the colt made to circle the yard for another three or four minutes. After that, a pair of reins should be put through two rings on the girth, and from there to the bit rings. When the colt answered to the reins, it should be placed in a team for a few hours, and then given a spell for half a day. In the discussion that followed, Mr. C. Masters considered that breaking in a horse should begin when it was a foal, because that made the subsequent handling easier and saved much time later on. The shoulders of the colt should be eased for, and a well-fitting collar provided. Mr. H. Simmons said the colt should be handled as quietly as possible. As regards mousing, he thought the colt could be left with the bit in its mouth and the reins fastened to the surcingle for half a day, and then moused in the usual way. It should then be put into harness and taught to pull, but care should be taken not to give it too much work for a start. Mr. A. Smith said care should be taken not to strike the colt on the head, or allow it to get away. It should not be worked for more than half a day for a start. Mr. H. Lewis said the colt should be placed between two quiet horses, and not worked for more than half a day. Mr. D. Jonas favoured rubbing the colt with a stick to make it accustomed to being handled. He preferred a running rein through rings on the surcingle and crupper, because that gave the head of the horse a better carriage. Shoulders should be washed with cold water to prevent scalding. He favored leaving the colt until it was five years before breaking in. Mr. W. H. Whittaker said where a crush pen was not available, the colt should be caught with a lasso and rubbed down with a bag on a stick. Mr. B. Evans considered that the colt should be taught to answer the rein properly before being put in the team. Mr. M. Masters said it was imperative to have

strong tackle. The colt should be left with the bit in its mouth for two days. When mouthing, care should be taken to give the same time on each rein. He favored breaking in the colt when it was two or three years old.

TALIA.

July 12th.—Present: 16 members and five visitors.

THE RAM FOR THE FARM FLOCK.—Mr. J. McBeath, who read a paper on this subject, said for the Talia district the Merino was undoubtedly the best breed of sheep. The class of country on which the sheep were raised should have a considerable influence on the selection of the ram. One of the main points would be: "What strength, constitution, bone, and character in the sheep will the land produce?" The poorer class of country required a ram with a stronger constitution than lands of a better quality. When choosing a sire for the flock, a ram with the following points should be selected: "Fleece with wool of an equal strength all over the body, clean face, masculine in appearance, with legs well woolled, but not overgrown. The horns should be wide, and not too short in the curl. Heavy wrinkles should be avoided at all cost." The paper concluded by drawing attention to the need for careful feeding, and keeping the ram in good, strong condition.

YADNARIE (Average annual rainfall, 14.09in.).

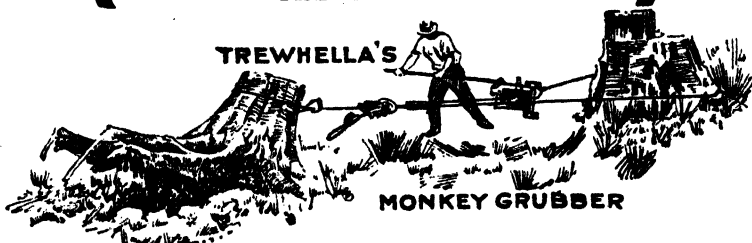
June 17th.—Present: 17 members and four visitors.

FARM MANAGEMENT.—In a paper bearing the title "An Ideal Balanced Farm," Mr. A. Jericho said that an evenly balanced farm was a credit to its owner, as well as a good advertisement for the district, and every farmer should strive to possess a farm of that description. Continuing, he said: "Many farmers make the mistake of investing too much money in one direction and allowing some other item to lag behind. The evenly balanced farm should have the house, horse-stable, cow-shed, fowl-house, and pig-sty all in proportion to a man's finance and requirements; fencing, water conservation, implements, &c., should also fall in line with the aforementioned. A common mistake made by farmers is that they try to work too much land, and it is mostly noticeable on the larger farms that everything is not in order. I am convinced that 1,000 to 1,500 acres of arable land is quite sufficient for one farmer to handle in this district. Anyone attempting to work this acreage single-handed is wasting time and money. Two men can comfortably keep one team going, or three men two teams, so obviously, working on the larger scale is the cheaper. In regard to livestock, it must be remembered that a few well-fed beasts are more profitable than too many under-fed stock. To plan out the evenly balanced farm, it is necessary to consider for a while when the wheat and wool money comes along in which direction to spend it. In 1911 a member of the Bureau advised farmers to work on an overdraft in the bank, but those times have passed. I said that an evenly balanced farm was a good advertisement to the district, because anyone travelling through the country will take notice of the various improvements on the farms, and if they see a large, up-to-date house and poor outbuildings or poor fences, they are likely to under-value the quality of the land. I notice that farm competitions are being conducted in the South-East, and these should be one of the finest inducements for a farmer to strive for an evenly balanced farm. I hope that the time is not far distant when competitions of this description will be carried out in this district. This Branch of the Bureau has achieved a great deal in the past, but the top rung of the ladder has not yet been reached. We must not rest until we have made every acre of our holdings produce to its fullest capacity." A good discussion followed, in which Mr. F. W. Jericho said he believed in putting his capital into the land. Mr. O. Forbes and Mr. A. Spriggs advocated erecting good substantial buildings, because they would last a long while. As the harvests could not be depended on, it was a big drawback to the mallee farmer to lay out too much cash and labor. Mr. P. G. Dolling thought that improvements should be made according to the value of the land.

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YEELANA.

August 2nd.—Present: 15 members.

THE TRACTOR ON THE FARM.—Mr. S. A. Wilkin read the following paper:—“Whilst the tractor is the best power for hauling farm implements, I do not think it will be possible to entirely dispense with horses on the farm. For ploughing, the tractor is much better than horse power. It can travel faster than a team, and the plough works much better without the heavy swings which are worked with large teams. The tractor and a combine drill is the most efficient equipment for seeding. Two men can do 40 acres per day, at a cost of 6d. an acre for fuel and oil. I have just completed a 200-acre paddock with a Sundercut plough, drawn by the tractor, at a cost of 1s. 8½d. for oil, kerosine, and petrol. For a 12-horse team it would take 4 tons of chaff at £5 per ton to do the same work. The tractor can be used for belt work, and a farmer using a tractor would be able to save the expenses of chaff-cutting plant and engine.”

EDILLILIE, July 26th.—Members submitted reports of harvest results and quantities of super used, which showed that varying quantities had no apparent effect where sown before heavy rain, but when the crop was sown after rain, with increases of up to 2cwt. of super per acre, increased yields could be readily distinguished; and it was generally agreed, taking into consideration the improvement in subsequent grazing, where land was cropped every third year, that 1½cwt. of 45 per cent. super was the most profitable dressing to use.

GREEN PATCH, June 28th.—Mr. C. Goddard (Assistant Wool Instructor at the School of Mines) delivered an address, “Fat Lamb Production and Marketing.”

EASTERN DISTRICT.

COOMANDOOK (Average annual rainfall, 18.01 in.).

July 17th.—Present: Nine members.

MOTOR POWER.—Mr. W. McArdle read the following paper dealing with the care and working of the four-cycle farm engine:—“The two most important parts of the four-cycle farm engine are the carburettor and the magneto. This type of engine has two valves, the duties of which are to operate in conjunction with the piston and the exhaust. The one that needs the most attention is the exhaust valve, which is subject to a stream of flame passing under and over it when the engine is running quickly. After the engine has been working some time, the bevelled edges, called the seat, become rough on the surface of the seat, and it will be necessary for satisfactory working to grind it in, say about once a year, to ensure gas-tight seating. The inlet, having cold gas passing over it, retains perfect seating for a long time, and is not likely to give trouble. The carburettor should be carefully adjusted, so that the correct amount of air will combine with the vaporised fuel. The intake tube from the carburettor to the engine should be tight, so that no leaks occur, otherwise the suction of the piston will not pull in the full charge, which, if not done, will mean loss of power. The Spark.—If the engine fails, in most cases it is the spark that is at fault, either at the plugs or at the magneto. Keep oil away from the magneto as much as possible. It is better to under-oil than over-oil a magneto, and if a high tension magneto is fitted, it is wise to fit a cover to keep off oil and dust. Farm engines are in many cases abused, and are expected to work in dust and dirt, and they are left standing in the rain. Nuts and screws should be looked over periodically and tightened, adjustments made where necessary, and the correct grade of cylinder oil used. It is, perhaps, advisable to use thicker oil in summer than in winter to ensure good compression under heavy loads. Give thick cylinder oil more liberally when the engine has become worn than when new, and better results will be obtained, and after the work has been done for the day, cover the engine with clean bags or a

suitable cover. Take steps to prevent sand and dust from getting into the bearings, and the engine will give faithful service." The paper concluded with a detailed explanation of the working parts and design of the four-cycle engine.

MARAMA.

June 23rd.—Present: Eight members.

FENCING.—Mr. J. Churches, who read a paper on this subject, suggested that fencing should be done with split gum posts and strainers, with T iron droppers for sandy country, and in firm flats, plain flat iron droppers would be very serviceable if gum posts were not placed at too great a distance apart. The

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speaker advised strains eight chains in length, because the wires could be made sufficiently tight to resist stock without too great a strain on the wires. Where material was available, he advised one gum post and three iron droppers, each about nine or 10ft. apart, but if that could not be done, one gum post every half chain, and two iron droppers to each gum post would make a strong fence. The strainers should be 7ft. in length and ordinary posts 5ft. 9in., in order to make the fence a height of 3ft. 6in. On sandy inclines, the height of the fence should be gradually raised to allow for drift. A fence for large stock only required three wires, No. 12 gauge barb on top, and the other two No. 8 plain wires. He advised boring six holes in the post so that the fence, if it was desired, could be made sheep-proof by running in the other three plain wires. The wires should be placed as follows:—Barb on top of posts, the first plain wire 11in. lower, and the second plain wire 10in. below the first plain wire. All strainers should be strutted before straining on the side against which the strain was made. Corner posts should be strutted on both sides, the strut being placed against the strainers between the barb and the top plain wire. If a sheep-proof fence was erected in rabbit infested country, he advised wire netting boundary fences and cyclone wires for divisional fences.

MONARTO SOUTH (Average annual rainfall, 14in. to 15in.).

July 12th.—Present: 21 members and eight visitors.

CARE OF MACHINERY.—Mr. G. Kuchel, in the course of a paper dealing with this subject, said sheds should be provided for every implement and machine on the farm. Iron sheds were the best. Straw sheds were a harbour for sparrows, and there was always a danger of fire. The first implement used for seeding was the plough, and the furrows should be adjusted properly, and the shares and mould-boards fastened correctly in position. It was always advisable directly seeding was finished to clean all super out of the drill. The drill should be overhauled, all worn parts replaced, bolts tightened, and any adjustments made which were necessary. Seed wheat should always be graded in order to ensure the smooth running of the drill. The tynes of the harrows should be sharpened to secure the best results. The binder was one of the most intricate machines on the farm, and required considerable attention. After it was used, all bearings should be thoroughly cleaned and oiled to prevent rust. It was a good plan to run a greased string from the knottor to the string box to prevent the intervening parts from rusting. Canvas should be cleaned and rolled. The knives should be sharpened to ensure a clean cut and an easier drive on the machine, the knives being sharpened at least twice a day. The harvester was an expensive machine, and should, therefore, be cared for in every possible way. The beaters should be set, and the bearings at either end adjusted. The comb should be set to avoid chocking. The harvester should be worked with three sieves to give the cleanest sample of grain. When harvesting was finished, belts should be removed and oiled.

NEW RESIDENCE (Average annual rainfall, 12.50in.).

July 30th.—Present: 17 members and two visitors.

FALLOWING.—Mr. F. J. Foord, who read a paper dealing with this subject, said a farmer with a holding of 1,000 acres should have at least 200 acres under fallow every season, which under average conditions should return 12bush. to the acre. He favoured a five or six furrow plough, worked with seven or eight horses in rough country, so that the plough could be set fairly deeply to pull out as many stumps as possible. Fallowing should be done early after seeding, to give the farmer plenty of time to cart off all stumps. The harrows should be worked occasionally, especially after a good rain. Sheep on the fallow were a valuable asset. They assisted in keeping the fallow clean and added to the fertility of the soil. In the discussion which followed, members were of the opinion that the harrows could be safely used on the flats, but on the sandhills, they encouraged drift.

COONALPYN, June 17th.—A large number of members and visitors attended the meeting, when Mr. A. H. Robin, B.V.Sc. (Veterinary Officer of the Stock and Brands Department) delivered an address, "Colic in Horses."

MURRAY BRIDGE, June 17th.—Mr. C. H. Beaumont (Orchard Instructor and Inspector for the district) gave an address, "Orchard Operations." On the following day Mr. Beaumont gave a pruning demonstration.

PINNAROO WOMEN'S, August 5th.—Twenty members and visitors attended the meeting, when Mrs. A. B. Jones read a paper, "Gardening," and an interesting discussion ensued. The officers were elected for the forthcoming year.

WINKIE, July 14th.—The Superintendent of Experimental Work (Mr. W. J. Spafford) delivered an address, "Feeding Live Stock," to a large gathering of members and visitors.

SOUTH AND HILLS DISTRICT.

MOUNT BARKER (Average annual rainfall, 30.93in.).

July 16th.—Present: 28 members and visitors.

BREEDING AND FEEDING OF PIGS.—Mr. L. Frame read the following paper:—
 "There is no better or more profitable side line than pig raising to work in connection with dairying or fruit-growing. In this district, or in the wheat-growing areas, pigs can be kept on damaged grain screenings. Barley can be grown to advantage for pigs' feed as a rotation crop, following wheat. That this district is eminently suitable for the production of first-class bacon there can be no doubt, because the first prize bacon and hams at the last Sydney Show were manufactured from pigs purchased in the Mount Barker market. The one stumbling block to the proper advancement of the pig industry is the lack of a good export market. At present we have periods of scarcity, followed by glutted markets and unpayable prices. For some considerable time prices have been good, but sooner or later, under present conditions, the inevitable slump will come. When it does my advice is to stick to pigs. Some people go into this business on a large scale when prices are high. A drop in the market occurs, and they generally sell their breeding stock at a loss and go out of the pig business considerably out of pocket. Whereas, if they had worked pigs in combination with something else in a small way, they would have been able to carry on during the period of low prices, and make a fair profit when the market rose. What little experience I have had with pigs has been gained by keeping a few stud Berkshires. When going into the pig business the first thing to do is to erect suitable accommodation for the stock. Styes for breeding purposes will be necessary. Choose a site for these on a slope facing east or north-east. In this district, in the winter time, it is highly important that the young pigs get the benefit of the sun. A shutter that can be raised during the day and lowered at night in the summer, in front of the pen, will be a great advantage. To keep pigs healthy, sunshine and fresh air are just as necessary as to human beings. The farrowing pen should be about 9ft. x 12ft. The walls should consist of stone, brick, reinforced concrete, or, if timber is plentiful, red gum slabs are useful, and should be about 8ft. high at the back, and 10ft. in front. The roof should consist of galvanised iron. Straw is certainly cooler in summer and warmer in winter, but it is constantly getting out of order and it also harbors vermin. The floor should be made of either brick or concrete, with a portion consisting of wood blocks or slabs, on which the pigs can sleep. A rail about 8in. from the floor, and about 8in. from the wall, securely fixed, will save many of the piglets from being smothered by the sow during farrowing, and for the first few days of their lives. Provision should be made at the side, or other convenient part of the sty, for a small pen for the youngsters to feed in away from the sow, or a creep can be constructed in the sty large enough to contain a shallow trough, where the piglets can feed without being molested by their dam. The construction of fattening pens will depend on the number of pigs to be kept. See that they are well drained, warm and dry in

winter, and cool in summer. Best results will be obtained by not keeping too many pigs in a pen. Draft out stores according to size—a small weakling will get a poor time if penned up with a number of strong and lusty ones. I favor keeping the boar in a yard, with suitable protection from the weather in the shape of a small shed, enclosed on three sides and open to the east. A few small paddocks securely netted and with proper shelters will also be a great advantage. The store pigs and sows, when raising young ones, can be grazed if suitable crops, such as lucerne, rape, or barley, are grown. The selection of breeding stock is the next consideration, and we will take the boar first. See that the boar, of whatever breed is decided upon, is a good specimen of that breed, and true to type. He should be pure-bred, pedigreed for preference, because the boar from the breeder's point of view, is more than half the herd, and no breeder can afford to keep a badly-bred, ill-stayed boar, no matter what his financial position may be. In choosing the boar, see that it is of a good length, with well-sprung ribs and good hams. Most boars have a tendency to go too "wedgy"—that is, too much shoulder and too light in the hams. It should have a good head. Another very important point in a boar is good legs and feet. Avoid inbent knees, hind feet too closely together, and hind feet set too far under the body; also the tail set too low. A common fault in pigs is a low-set tail, narrowness under tail, and cat hams. Choose sows from large litters, if possible. See that the dam is a good mother, of good temper and disposition. Wild or nervous sows are seldom a success as breeders. See that they have at least 12 teats, and that the teats are well spread. Length in a brood sow is very important, as they must have an udder large enough to suckle large litters of pigs. Keep pure-bred sows, if possible, because the progeny have a better appearance and generally fatten more readily on less feed than mongrels. What I said with regard to the feet and legs of the boar also applies in the case of the sows. A crippled sow is generally a failure as a breeder, often having small litters, some of which she generally manages to kill. The boar will be fit for service when about nine months old. The boar will get stock when only six months old if the sows are not too large. I prefer not to use a boar until 12 months old. The sows will also breed at six months, but it is advisable not to use them for breeding purposes until nine months old. The period of gestation being 16 weeks, by waiting till nine months will give them the first litter at 18 months. After being served, the sows should be turned out to graze until about two weeks before they are due to farrow. If on good grazing, such as barley, lucerne, rape, or even common dandelion and clover, all the hand-feeding they will require will be a small quantity of bran or pollard once a day. It is useless to keep in-pig sows confined to small pens, and feed on rich food. They generally become over-fat, and have small litters of weak pigs. After farrowing, the sow should not be fed for at least 12 hours; then fed sparingly for a few days, gradually increasing the ration until it will take as much food as it can consume. Remember to feed it with food that will produce milk. The sow will probably lose condition during the time it is rearing her young. I prefer to boil the grain for brood sows, and get good results from boiled wheat and barley. Two feeds of either wheat or barley a day, with one feed of pollard by way of variety, in addition to skim milk and green feed, such as young lucerne, mangolds, kale or cabbage leaves makes a good ration. When the young pigs are from three to four weeks' old they will commence to take food from a shallow vessel. After a few days induce them to feed from a shallow trough out of reach of their mother. By the time they are eight weeks old they will be feeding well, and can be taken from the sow, and will receive no check. If porkers are to be marketed, confine the young ones in a good sty and feed them well for the next two months, and they should be fit for the butcher. On the other hand, if baconers are required put them in one of the grazing paddocks, and if the feed is good, all they will require is two feeds a day of boiled barley, wheat, or pollard, sufficient to keep them in good growing condition for the next three months. If at the end of that time these pigs are of suitable size, they can be put in the fattening pen, and their ration gradually increased until they are consuming the maximum amount of food. The kind of food for fattening pigs is generally a question of price. Sometimes it is cheaper to grind wheat than to buy pollard; barley is often selling at a low price, and if of a good plump sample, is the cheapest kind of cereal food. The fattening pigs should be fed at least

AGRICULTURAL PUBLICATIONS.

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THE AGRICULTURAL BUREAU. Particulars of this Organization, of which every farmer should be a member, can be had on application to the Department.

three times a day at regular intervals. If feeding mainly wheat or barley, give the mid-day feed of pollard, or if feeding with pollard mainly, give wheat or barley at mid-day in order to vary the feed. In the later stages of fattening the addition of a few peas will greatly improve the condition of the meat. A matter that was before this Bureau some time ago was the compulsory fire-branding of pigs. This is a matter which has my full support, and the man who feeds his pigs properly has everything to gain by the scheme. The man who raises his pigs on fruit, skim milk, offal from slaughter-houses, and, maybe, dead fish, will not approve of the scheme. Skim milk in moderation is a splendid addition to the ration of either a store or fat pig. In fact, it is almost indispensable in rearing young pigs. Fruit is also good for young pigs and stores, but should only be fed sparingly in the later stages of fattening, if at all. The mistake that some dairymen make is in feeding their pigs almost entirely on skim milk. They will grow on this food, and fatten, but the flesh will be soft and flabby, and the bacon made from them will be of poor quality. If the dairymen who fatten pigs were to increase their number and feed more grain and pollard in addition to milk, the result would be a better quality bacon and more profit to the feeder. In conclusion, I would like to point out one or two common mistakes made by pig keepers. Any insanitary hovel is good enough for a pig. Any kind of rubbish is good enough food. No animal responds better to good treatment than the "gentleman" that pays the rent. Frequently clean the styes, and give abundance of bedding to all except the sows with very young pigs. These should only have a limited amount of short, dry straw for the first fortnight after farrowing. The bedding of these should be changed at least every two days for the first fortnight, because in certain weather it becomes damp and steamy, and is likely to bring on a chill, perhaps followed by pneumonia. Always be on the look-out for pig louse or tick. These in the past have been a source of much trouble and loss, but, thanks to the vigilance of the stock inspectors, are on the decrease. A good remedy for tick is kerosine and oil in equal quantity, put on with a brush. I have used the above mixture in the proportion of two of kerosine to one of oil. It depends a good deal on the skin of the pig, some being more sensitive than others. To get the best results from pigs, always keep them supplied with charcoal. I give fresh charcoal weekly, and the amount they get through is surprising. A sow with litter will generally get through half a kerosine tin a week."

CLARENDON, May 20th.—Ten members attended the May meeting, when a paper, "Concrete Floors," was read by Mr. J. H. Dingle. Mr. A. Harper tabled samples of "Rome Beauty" apples.

CLARENDON, June 16th.—Mr. G. Connor, of the McLaren Vale Branch, read a paper, "Tanning Hides and Skins," and replied to numerous questions.

LENSWOOD AND FOREST RANGE, July 7th.—Fourteen members and four visitors attended the July meeting, when papers dealing with the subjects, "Cool Storage of Apples," and "Oil Wrappers for Apples," were read and discussed.

HARTLEY, July 16th.—Mr. F. Lehmann read a short paper, "Grasses," in which he dealt with the possibilities of growing fodder plants on the flats and gullies close to the Mount Barker creek and other small streams in the Mount Lofty Ranges. The Honorary Secretary (Mr. W. B. Hudd) presented the annual report, and the officers were elected for the ensuing year.

IBON BANK, July 25th.—Members discussed the subject, "Motor Power v. Horses." It was generally agreed that motor traction power was preferable to horses, but members thought that the average gardener and orchardist would have to keep one or two horses for ploughing, &c. It was decided that meetings should be held on Friday night on or before full moon.

RAPID BAY, August 2nd.—Mr. G. A. Stacy read a paper, "Sheep for Southern Districts," and a long and instructive discussion followed.

ROCKWOOD, July 22nd.—The Superintendent of Experimental Work (Mr. W. J. Spafford) attended the meeting and delivered an address on agricultural matters of local interest.

SOUTH-EAST DISTRICT.

ALLANDALE EAST.

July 11th.—Present: Six members.

REARING CALVES.—Mr. C. P. Kennedy contributed a paper dealing with this subject, in the course of which he said the calf should be taken from the cow about 24 hours after birth. The first milk of the mother should always be given to the new-born calf. During the first few days it would be found necessary to use the fingers to teach the calf to suck, but after the first time or two, the fingers could be gradually drawn out whilst it was sucking, and it would soon drink without them. If, however, the calf would not drink without the fingers after the first three or four days it should be made to miss one meal, and then its head should be placed in the milk deeply enough to cover the nose for a few seconds. It would then draw the milk through the nose and gradually commence to suck without any further trouble. The calf should be given fresh milk for the first two weeks, then half the drink should consist of separated milk for another fortnight, after which, if no separator milk was available, the calf should be given whey, and about $\frac{1}{2}$ lb. of copra cake per day. The change of food sometimes resulted in scouring, but a drench of lime water made a quick and effective remedy. In winter it was necessary to have a small shed or warm shelter for the young calves; a straw stack near the homestead would answer the purpose admirably; and in summer, shade from the sun should be provided. Whey should always be warmed when it was fed to calves under three months old, and it should never be mixed with skim milk. The best method of softening copra cake was to pour hot water on it and allow it to stand for a while, when it should be mixed with the whey. When the calves commenced to eat grass, care should be taken not to give too much drink at one meal, because they were liable to become blown. The quantity of drink required for each calf could best be judged by the one who was feeding them, but if each calf was fed separately, feeding could easily be regulated. Most calves could be weaned at 16 weeks, but in the winter, if weaning, it would be found advisable to feed them a little longer. In the discussion that followed, Mr. S. Butler said that it was not a payable proposition to give the calf the cow's milk for a fortnight. Mr. L. J. Stewart had found pollard and whey a splendid body builder, and an inexpensive feed. Mr. C. Griffin said a calf born in June had the advantage of good spring grass, whereas when the calf was dropped in October and November the grass was not so succulent.

KALANGADOO (Average rainfall, 33in. to 34in.)

July 12th.—Present: 15 members.

The Hon. Secretary (Mr. W. J. Evans) read the annual report, and officers were elected for the ensuing year. The Manager of the Kybybolite Experimental Farm (Mr. L. J. Cock) delivered an address, "Top Dressing of Pasture Lands."

SUMMER FEED FOR DAIRY COWS.—At a recent meeting the following paper was read by Mr. L. S. Davie:—"The feeding of milking cows is a serious problem at any time of the year, but the problem becomes very acute in the late summer and autumn months when natural grasses are too dry to be of any service, and when it is too early to look for assistance from the green feed resulting from autumn rains. Those who have rich drained swamp lands, that when worked will produce heavy crops of summer fodders, are in the most fortunate position, but if the dairying industry is to be successful in Kalangadoo, then some system of summer cropping must be evolved that will be suitable for the average landholder in this district. During October of last year, I planted out about 4,000

chou moellier plants. In planting, however, I made the mistake of planting too closely. When the plants are put out they seem to be a long way apart, but later, as they grow, one finds it difficult to cultivate unless the rows are at least three feet apart. This crop is a good yielder on ordinary land, if it is dressed with either super or stable manure. It also seems to hold its own on ground that is rather dirty if room is given to use the cultivator. The work of plucking the leaves is considerable, if a number of cows are to be fed, but that objection can be applied to any crop that has to be carried out to the animals. In October I also sowed two crops of maize. Early in the month I broadcasted about 1 acre of Horse Tooth seed, and about $\frac{1}{2}$ acre each of Hickory King and Ninety Day seed in drills, all on old ground, without manure. These made a very patchy growth. At the end of the month, I broadcasted 2 acres of Horse Tooth seed between fruit trees, on new ground that had been ploughed in the autumn at seeding time. This crop was slow at coming away, owing to the cool weather, but as the weather warmed and summer rains fell it produced a fair amount of feed. As a milk-producing fodder, I do not favor it. When the plants are young the cows do not seem to care very much for them, but the cattle eat them more readily when the cobs are well developed. Although I have been giving approximately $\frac{1}{2}$ cwt. per day, in two feeds, the animals continued to lose condition and fall away in the milk yield. I have had experience with lucerne and am of the opinion that this is the best fodder. It has proved a success in Kalangadoo with irrigation, and if land is well worked, I am convinced that it can be grown for grazing without irrigation, and although it might not last for a long period or return heavy cuts, I think it should pay well."

SANDALWOOD.

July 29th.—Present: 10 members.

RABBIT DESTRUCTION.—Mr. J. E. Hood read a paper from the *Journal of Agriculture* dealing with this subject, and in the discussion that followed Mr. T. Watchow expressed the opinion that trapping was the best method of dealing with rabbits. Mr. J. Hood said poison baits should be distributed after the first rains. Mr. L. Norman said rabbit trapping at the present price of skins was a profitable occupation. Mr. T. Watchow said that if poison was laid during the summer months and traps used throughout the year, the returns from skins would repay for the trouble of trapping and rabbits would not become a menace to the settler.

MOUNT SCHANK, July 22nd.—The subject, "Sparrow Destruction," was brought before the meeting, and an interesting discussion ensued. Other matters of local interest were also brought forward for consideration.

NARACORTE, June 7th.—The subject "Removing Surplus Water from Small Holdings," was brought before the meeting, and an interesting discussion followed. The question of inaugurating Pasture Competitions was also discussed.

WIRREGA, June 2nd.—Seven members attended the June meeting, when a paper, "Following with a Cultivating Disc Plough," was read by Mr. C. R. Williams.

A further meeting was held on July 11th. A paper from the *Journal of Agriculture*, "Johnson Grass," was read, and an interesting discussion followed.

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T. BUTTERFIELD,

Minister of Agriculture.

INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

[Replies supplied by MR. A. H. ROBIN, B.V.Sc., Stock and Brands Department.]

"E. T. O.," Reynella, reports light draught gelding suddenly blind in both eyes.

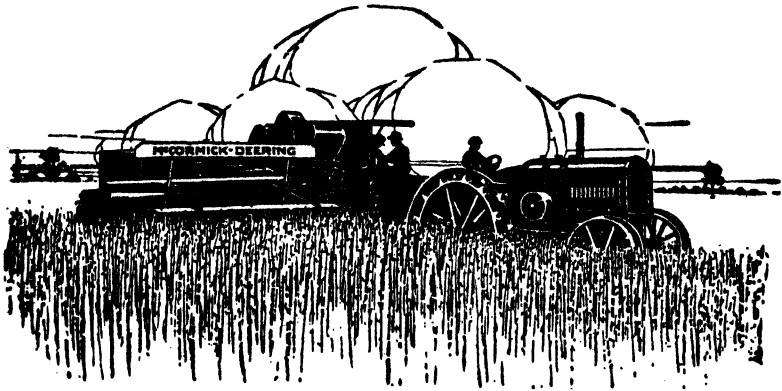
Reply—The condition appears, from your letter, to be one of internal ophthalmia, involving the nervous functions of the eyes. Keep the animal in a dark box, and keep the eyes constantly covered over with a cloth damped in a little weak vinegar and water. Instil into the eyes three or four times a day, so that it runs all over the front of the eyeballs, a little of the following lotion:—Zinc sulphate, 16 grains; boracic acid, 16 grains; atropine, 16 grains; distilled water, 4 fluid ounces. Give the horse a good purgative dose of medicine, preferably an aloes ball, and feed subsequently lightly on laxative though nourishing food. Give a small teaspoonful three times a day of powdered nux vomica, mixed in a little honey or molasses to make a paste, and smear it over the back teeth and tongue.

Hon. Secretary, Agricultural Bureau, Williamstown, reports cow with small hole in teat. Can it be enlarged?

Reply—The canal in the teats may be enlarged with the use of a special little instrument known as a teat dilator, which is obtainable from any surgical instrument firm. Providing care is taken to use it gently and always with scrupulous cleanliness, no ill effects are likely to follow.

"E. E. H.," Morphett Vale, report horse with the bowel exposed from the back passage, also sow with prolapse of breeding bag.

Reply—(1) *Bowel prolapse*:—The condition may arise from a variety of causes. In recent cases the mucuous membrane is cleansed and replaced by steady pressure with the hand. This may have to be repeated. Should the membrane be swollen, bathing first with astringent solutions such as 2 per cent. to 5 per cent. alum solution will facilitate reposition. The animal should be subsequently kept quiet for a few hours, and given a dose or two of opium to prevent straining. If the prolapse repeatedly recurs or if treatment is delayed until the protruded part becomes injured, surgical interference by a skilled operator is necessary. (2) *Breeding bag prolapse*:—This condition is only likely to occur incidental to or closely following parturition. It must not be confounded with prolapse of the bladder, which may occur at any time, and for which condition it has sometimes been mistaken by untrained observers. Prolapse of the breeding bag may be treated in the smaller animal by first cleansing the protruding organ, hold the animal with hindquarters, raise and gently push the displaced parts back through the passage. After this has been effected, pass into the bag a pint of hot saline solution (1 teaspoonful salt to 1 pint water), still holding animal up by the hind lege. This injected fluid will assist in completing reposition of the displaced organ. Subsequently the animal wants to be kept quiet, and with the hindquarters raised above the level of the forequarters. It may be necessary to pack the passage with a clean towel, or pad of cotton wool, &c., suture the lips of the vulva.



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Hon. Secretary, Weavers Agricultural Bureau, asks best method of combating blowfly pest.

Reply—Up to the present the best method for preventing sheep against blowfly pest that has been discovered is to dip the sheep with arsenical sheep dip at slightly over the double strength usually used, the dipping being left as late as possible so that there is a fair growth of wool after shearing. If sheep become soiled, they should be kept breeched. Keep the general health of the flock in the best possible condition by the provision of sheep lick—50 parts each of salt and ground sweet bonemeal, and three parts each of sulphate of iron and powdered gentian root. Rams' horns may be protected from blowfly strike by dressing them with crude fuel oil.

Hon. Secretary, Kangarilla Agricultural Bureau, asks the reason for hair falling from neck and rump of cows and remedy for same.

Reply—This may arise from a mild dermatitis, due to want of cleanliness of skin or to unthriftness of condition. The parts should be washed with warm soapy water to which is added some lysol. Put on with an old scrubbing brush. After drying thoroughly, rub in a little vaseline occasionally to the roots of the hair. Give the cows a good purgative dose of Epsom salts, and subsequently feed liberally on good rich feed with the addition of plenty of green feed. Give the cows four tablespoonfuls of ground sweet bonemeal in their feed three or four times a week. Also supply rock salt for them to lick.

"A. O. B.," Yacka, reports horse recently recovered from stoppage of the bowels. Horse cannot be induced to eat, and is losing condition.

Reply—The loss of appetite may arise from chronic indigestion arising out of the original trouble. Try the following:—Have some powders made, each containing powdered nux vomica, 1 dram; powdered gentian root, 3 drams. Mix one powder up in a spoonful of honey or molasses to make a stiff, sticky paste, and smear it over the back teeth and tongue so that she has to lick it down. Give the powder a quarter of an hour before feed time. This should assist in restoring the animal's appetite. Water from a bucket if possible, and dissolve 1oz. of soda hyposulphate (photographers' hypo.) in it daily.

"C. H. R.," Karoonda, asks best method of curing cracks in horses' hoofs.

Reply—It is presumed that the cracks are vertical, and extend from the ground surface of the foot. If lameness is present, the foot should be poulticed with antiseptic poultices for a few days until the lameness subsides. If there is no lameness present, all that first requires to be done is to remove all dirt, grit, etc., from the crack. If the split extends only part of the way up the wall, cut and burn a horizontal groove just above and across the top end of it. This will prevent the split extending higher, and help the sound horn above it to grow down without becoming affected. The edges of the crack should be brought together and kept close by clipping, but if this cannot be done, fill it up with gutta percha or a piece of wood driven into it from the bottom edge of the foot and shaped so as to just fit into it. This will keep it protected from the entrance of irritating dirt and grit which sets up lameness. The foot should be shod, and the "bearing" eased over the bottom edge of the crack. Where the crack extends to the coronet cut and burn out two converging grooves, one on either side, starting at the coronet $\frac{1}{2}$ in. from the split and converging V-shaped, about 1 in. down from the coronet. The V-shaped piece of horn so isolated by these two grooves should be thinned out with a hoof knife. In every case, the growth of sound horn should be stimulated by the application of an occasional blister to the coronary band.

"O. J. M.," Hon. Secretary, Alma Agricultural Bureau, forwarded specimens of parasites taken from a horse.

Reply—These have been identified as follows:—(1) The larvae of the common bot fly (*Gastrophilus equi*).—These, as a rule, do not occasion very much trouble, though when very numerous may mechanically interfere with the passage of food out of the stomach, where they stay for about eight months. The most satisfactory medicine for their removal is green feed, and this usually brings them

away in the spring of the year. The following is said to be fairly efficacious:—**Starve horse for 24 hours**; give $\frac{1}{2}$ teacupful of fresh ox gall with $\frac{1}{2}$ pint warm milk as a drench, and follow in two hours time with a pint of raw linseed oil and two tablespoonfuls of turpentine. (2) The common tapeworm of the horse (*Taenia perfoliata*).—This is a flat white worm, lin. to 2in. long and up to $2\frac{2}{5}$ in. wide, with a prominent head. They feed on the food contents of the bowels in which they lie loosely. They may be removed by starving the horse for 24 hours and then giving the following drench:—Turpentine, 2oz.; powdered araca nut, 1oz.; raw linseed oil, 1 to $1\frac{1}{2}$ pints. (3) The large blood worm or “pallisade” worm (*Strongylus armatus*). A straight stiff worm, greyish-red in color, up to $1\frac{1}{2}$ in. long, inhabiting the large gut and caecum (or water gut) of the horse in the adult form. The larval forms are found in the wall of the gut, forming small nodules, and in the arteries, particularly the aorta, near the kidneys, where they produce worm aneurisms. (4) The small “blood worms” (*Strongylus tetracanthus*).—A smaller worm, normally white in color, but often bright red due to the blood contained in its body previously sucked from its host. It runs from $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long. It is usually found associated with the large *Str. armatus* in the bowel of the horse. The embryos form nodules in the bowel wall, but do not invade the arteries. Treatment must be commenced early to be of great value. To start with, starve the horse for 24 hours and give 2oz. turpentine; 1 to $1\frac{1}{2}$ pints raw linseed oil as a drench to expel as many worms as possible. Then give the horse two tablespoonfuls of Fowler’s Solution of Arsenic daily in the feed or drinking water for 14 days, stop for a week, and repeat again for another 14 days. Many small whitish worms were also found in the specimen. These are simply less matured forms of these two varieties of blood worms already mentioned. From the heavy infestation of this animal, the owner can be assured that the remainder of his stock will be in a similar condition, and he should take steps to treat them with a view to cleaning them up. As the transmission of intestinal parasites is by way of water supply, he is also recommended to take steps to ensure purity of that.

“J. F. B.,” Denial Bay, has aged horse stiff in hindquarters, and staggers when turned short. Sweats with the slightest exertion, shows the whites of the eyes, and is short winded.

Reply—Give the horse 2oz. turpentine and $1\frac{1}{2}$ pints raw linseed oil as a drench, and feed only on light sloppy feed till the physic works off. Subsequently feed on light easily digested feed, and put a handful of Epsom salts in the feed night and morning for a week or 10 days. Do not feed on too bulky feed. Also mix in the feed night and morning for 10 days two tablespoonfuls of Fowler’s Solution of Arsenic, stop for a fortnight, and repeat again for a further 10 days. Have the teeth examined, they may need attention.

“C. W.,” Ned’s Corner, reports wether with wool matted together similar to felt near the skin.

Reply—The condition of the animal’s fleece has probably arisen from some disturbance of the normal function of the sebaceous glands of the skin, which secrete the greasy substance known as “yolk,” the function of which is to surround the wool fibres and prevent their becoming matted or felted together. This felting would exert an effect in retarding subsequent wool growth. If you can get the animal’s skin cleaned up by combing and washing, rub in a little vaseline to the roots of the wool fibres occasionally. Supply the sheep with licks such as common salt 50 parts, ground bonemeal 50 parts, sulphate of iron 3 parts, gentian root 3 parts, to improve the general health.

“T. B. B.,” Clarendon, asks for signs by which a virgin heifer can be detected.

Reply—The udder development, indicative of whether the beast has ever been in milk or not, is usually the most definite sign of distinguishing a virgin heifer and one that has bred. Beyond this, one can generally form an opinion by the state of the vaginal passage. In virgin heifers the external opening of this is small, and there is great difficulty in passing the hand into the passage; in most cases it is impossible to pass the hand in owing to the smallness of the opening. In a heifer that has bred, this passage is larger and more relaxed, and one can pass the oiled hand in without very much difficulty.

AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

THIRTY-FIFTH ANNUAL CONGRESS.

The thirty-fifth Annual Congress of the Agricultural Bureau of South Australia was held in the Victoria Hall, Gawler Place, Adelaide, on September 8th, 9th, and 10th, 1924. During the opening and following sessions officers of the Department of Agriculture and members of the Advisory Board of Agriculture, as undermentioned, attended:—The Minister of Agriculture (Hon. T. Butterfield, M.P.), the Chairman of the Advisory Board of Agriculture (Mr. W. S. Kelly), the Vice-Chairman of the Advisory Board of Agriculture (Captain S. A. White C.M.B.O.U.), the Director of Agriculture (Professor Arthur J. Perkins), the Principal of the Roseworthy Agricultural College (Mr. W. J. Colebatch B.Sc., M.R.C.V.S.), the Horticultural Instructor (Mr. G. Quinn), the Chief Agricultural Instructor (Mr. W. J. Spafford), the Poultry Expert (Mr. D. F. Laurie), the Dairy Expert (Mr. P. H. Suter), the Assistant Dairy Expert (Mr. H. J. Apps), the Deputy Horticulturist and Manager of the Berri Orchard (Mr. C. G. Savage), the Manager of the Blackwood Orchard (Mr. R. Fowler), the Manager of the Kybybolite Experimental Farm (Mr. L. J. Cook), the Manager of the Booborowie Experimental Farm (Mr. E. A. Bristow), the Field Officer (Mr. S. B. Opie), Orchard Instructors and Inspectors (Messrs. H. H. Orchard, E. Leishman, C. H. Beaumont, and J. B. Harris), the Experimentalist R.A.C. (Mr. R. C. Scott), the Instructor in Dairying R.A.C. (Mr. R. Baker), the Viticultural Instructor R.A.C. (Mr. D. Quinn), and Colonel Rowell, Messrs. L. Cowan, B.Sc. (Agriculture), J. W. Sandford, C. J. Tuckwell, F. Coleman, C. A. Loxton, B.V.Sc., H. S. Taylor, A. B. Feuerherdt, P. H. Jones, H. Wicks (Members of the Advisory Board of Agriculture), and the Secretary (Mr. H. J. Finnis).

DELEGATES.

The following delegates represented the undermentioned Branches:—Allandale East—W. Laslett, J. Stewart; Amyton—H. Gum, T. Ward; Arthurlton—T. Howlett; Balaklava—J. Treloar, D. McArthur; Balhannah—V. Spoehr, W. Henderson; Barmera—E. Farmer, D. Brooke; Beetaloo Valley—J. Halse, A. Bartrum; Berri—H. Andrew, A. Magarey; Bethel—F. Schmidt, F. Geue; Blackheath—J. and E. Pym; Blacksprings—J. Hudd, J. Heinrich; Blackwood—R. Fowler, A. Magarey; Block E—R. Fisher; Blyth—E. Lanyon, H. Zweck; Booleroo Centre—Rev. Howland, H. Michael; Borrika—G. Bonython, S. Lester; Brinkley—E. Pearson, S. White; Brinkworth—H. Ottens, F. Heinrich; Bundaleer Springs—E. Cooper, W. Barry; Butler—D. Butler; Cadell—R. Frankel; Carrow—T. Beare, C. Puckridge; Charra—E. Dahl, F. Haseldine; Cherry Gardens—G. Basey; Clarendon—T. B. Brooks; Claypan Bore—D. Gray; Cobdogla—T. English, R. James; Coomandook—R. Upton, M. Wilkin; Collie—J. Olsen; Coonalpyn—J. Cronin, O. George; Cygnet River—



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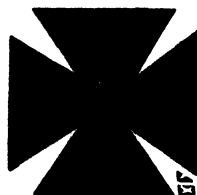
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Twcedvale—E. Dearnan, P. Henschke; Two Wells—H. Kenner; Virginia—W. Lang, W. King; Waikerie—H. Milner, F. Harden; War-cowie—N. and W. Crossman; Watervale—G. Holder; Weavers—E. Anderson, J. Sheriff; Whyte-Yarcowie—E. Pearce; Williamstown—E. Rix, G. Brown; Williamstown Womens—Mesdames Filsell and Ham-matt; Willowie—W. and F. Bull; Wilmington—J. Hannagan; Windsor—H. Clark, A. Williams; Winkie—J. Nolan, F. Bond; Wirrabara—T. Stead, E. Pitman; Wirrilla—H. Schunke, D. Garrett; Wirrulla—H. Doley, C. Campbell; Wudinna—J. Barclay, J. Butterfield; Wynarka—H. Hood, M. Blackett; Yacka—A. Badman, W. Richards; Yadrarie—W. Hoffman, G. Langston; Yallunda—J. Hutchens, W. Dagett; Yaninee—R. and N. Hicks; Yeelana—J. Haarsma; Younghus-band—G. Mann; Stirling West—P. Probert, W. Davies; Alma—A. Shepherd, T. Freebairn.

Monday Evening.

THE MINISTER'S ADDRESS.

The Minister of Agriculture delivered the opening address. He assured the assemblage of his pleasure to declare the Congress open, and expressed the hope that the discussions would be beneficial to the State. He was also pleased with the change that had taken place in the season's prospects. At times it had given the Government considerable anxiety in regard to the future of the crops for this year, but the recent rains had altered the position, and they hoped to hear of a further good downpour throughout the State which would result in much greater benefit. (Applause.) The Government realised that the enormous liabilities of this State should be met chiefly from two primary products—wool and wheat. They would like to see increased production as their liabilities grew heavier.

WHEAT MARKETING.

So far as the present Government were concerned, they were most anxious to encourage the producer. That afternoon they had been in further consultation with the Commonwealth Government in regard to a voluntary wheat pool. The Premier had given that question considerable attention ever since he had been in office, and it was no fault of the State Government that a voluntary pool was not in sight to-day. They were still doing their best, and if they could not get the other States to fall in line or the Federal Government to assist them this year he felt sure that the Premier would forgive him when he told them that the Government would do their best within their power to back a voluntary pool themselves. (Applause.) He was hopeful that the negotiations for a pool between the four wheat-producing States would be consummated, but the conditions imposed by the Prime Minister seemed to preclude anything being done this year, especially in the earlier States, where they were on the eve of harvesting. However, the Government would endeavour to give farmers an opportunity to have a voluntary pool in this State. (Applause.)

STRENGTHENING THE DEPARTMENTAL STAFF.

The Minister said during the last few weeks he had been able to strengthen the Department of Agriculture by the appointment of an agricultural instructor to visit farmers and advise them on the best methods to adopt to ensure better results. They might possibly go a good deal further in that direction in the future. (Applause.) He thought it would be well if the conference gave some indication to the Government as to what they believed to be the better method in regard to the expenditure of a considerable amount of money—whether by the establishment and carrying on of experimental farms, or the appointment of more travelling inspectors, coming into constant touch day by day with individual farmers to discuss matters and assist them.

CENTRAL OR COUNTRY CONFERENCES.

Congress should also decide whether district conferences and more district conferences would not be of additional value. Personally, and he had been over nearly every part of the State, he could not see that there would be much affinity in conditions existing between a delegate from the north, say, around Orroroo, and another from the South-East. He contended that district conferences, at which they had Government agricultural experts, were a most desirable factor in the progress and prosperity of agricultural industry. There was, in addition, increased expenditure in connection with the holding of central congresses. This expense had been borne by the Governments in the past, but in view of the great number of associations who would have possibly an equal claim, and the ever-increasing burden that was being placed on the Government, cognisance must be taken of the question of the future allocation of money for this purpose. He was not too sure in view of the financial position of this State, whether the expenditure could not be better devoted to matters more directly affecting them in their own districts. The Government would be glad to have their advice on these points.

PROGRESS AND MARKETING.

In conclusion, the Minister referred to the appointment of Dr. A. E. V. Richardson as Director of the Waite Research Institute, and said they were glad to welcome him back to this State. They looked forward to his re-entry into South Australia as the signal for the advancement in agricultural science in this State. (Applause.) Outstanding among the difficulties facing the producer to-day was that of marketing. (Applause.) It must be overcome. He could not believe that it was due to over-production. The more production they had, the better it would be. The difficulty lay more in the want of continuity of supplies, and the only remedy was organisation. Producers were not united enough in order to improve matters. (Applause.)

CHAIRMAN'S ADDRESS.

The Chairman of the Advisory Board of Agriculture (Mr. W. S. Kelly) said he essentially believed in the importance of agricultural

education. The question was to what extent could they take for granted its importance. They had arrived at a definite conclusion that primary education went without argument. Was it equally true that they held that agricultural education was for the best interests of the State? It was of vast importance to the State. They were only yet at the beginning of this great movement. Money spent in this direction was about the best investment they could make in South Australia. (Applause.) He submitted that the State was getting good service for the money voted on agriculture. Five Government experimental farms cost on the whole £15,000. They returned approximately £10,000, so that the net cost to the State was £5,000, or an average of £1,000 each. If they were not costing more than that, and were helping producers to form sound judgment, and steer a way through, surely then that money was well expended. (Applause.) They all agreed that propaganda to the door of the farmer was an important function of the Bureau system, but he submitted that central gatherings had much to be said in their favor. There had been Congresses held in that hall which had been a great inspiration throughout the State. In regard to crop competitions, they could learn the best practices of their best farmers. (Applause.)

LAMB TRADE.

Mr. Kelly said we had lost ground in the lamb trade. Surely it was worth while in a State like ours? Where could they get five better months to grow lambs than in South Australia with its beautiful climate? We had sunshine and fodder, and we could grow fat lambs with any other part of the world. The funny thing was that we did not do it. Why should not the mid-north farmer be driving into market good flocks of lambs month by month during the spring of the year? They did not need to sacrifice their wool business.

VETERINARY RESEARCH.

The speaker observed that many sheep-breeders in agricultural areas would agree that we suffered serious losses annually—some years worse than others—because of strange mortality among our breeding flocks and fat lambs. We had the Stock Department, the officers of which were prepared to assist stockowners at all times, but their time was fully occupied in the maintenance of the health of the State in connection with notifiable diseases among stock. Nobody was set aside to investigate the cause of mortality referred to, and he thought some appointments might be made in that respect. We were losing too heavily. Touching upon top dressing, Mr. Kelly said there were thousands of acres in the rainfall areas which could be doubled and trebled in their carrying capacity by the application of a few hundredweights of superphosphate. (Applause.)

On the motion of Captain S. A. White, seconded by Mr. Wallace Sandford, a vote of thanks was accorded the Minister.

Tuesday, September 9th.—Morning Session.

THE NEED FOR ROTATION CROPPING, AND ITS VALUE.

[Paper by Mr. A. S. TOLL, Gawler River Branch.]

The subject of this paper is one that is generally agreed with by the majority of farmers of this State in the abstract, but in my opinion the matter of rotation cropping does not receive the attention to which its importance entitles it from the majority of our farmers. Neither is it so closely woven into our policy of farm management as it ought to be.

I wish to pay tribute to those men, who, by scientific research, have done so much in every branch of agriculture to increase the production of our lands, and we owe a duty to the State, to apply those principles in a practical way, so that every acre of land under our control will give its maximum return. I do not intend to attempt any scientific explanation of the beneficial results that I have found to follow the system of rotation cropping, but to speak for a few minutes of the need for, and the value of, this system.

Of course rotation cropping of itself will accomplish very little unless aided by thorough cultivation, liberal super dressing, careful seed selection, and good farming methods generally, but given all these it will greatly improve our yields.

Most of the farm lands in this State have now been growing wheat principally, for many years, and although with the addition of fertilisers they retain their fertility and will continue to do so indefinitely, there are very few paddocks even in the best localities that will not give improved yields if, periodically, they are given a change to oats, or English barley, or any other crop suited to the district.

Oats are perhaps more generally used than any other cereal as a change or rotation crop, but in districts where there is a good rainfall and where the atmospheric conditions are fairly humid, preferably within about 25 miles of the sea board, English barley will give good results. If a farm is worked on the principle of half bare fallow and half in crop, the production of the farm will be greatly improved if given a change from wheat to oats, or English barley, at least once in every six years. Where the policy is to crop two or three times in succession to fallow, a change to oats or barley in every cycle is necessary, if heavy yields are to be maintained. This system will be found invaluable to eliminate take-all, and I will quote an instance. In 1920 we had 100 acres of rich land, well worked fallow planted with wheat on one of our farms near Wasleys. It was planted in May, came up well and promised a heavy yield, but in August take-all appeared and it yielded only 8bush. per acre. The next year we sowed it with English barley and it averaged 30bush. per acre. The following year this paddock was fallowed and last year sown with wheaten hay which averaged 3 tons per acre.

The same satisfactory results have been obtained on a large area during the last four years by a systematic rotation of wheat, English barley, and oats. And not only in respect to increased production in

regard to succeeding crops is rotation cropping essential, but in improving the feed and stock-carrying capacity of land so treated will be found most valuable.

OTHER OPINIONS.

In reply to a question Mr. Toll said English barley was preferable to Cape barley as a feeding crop, and whilst it did not yield quite so heavily as the Cape variety, that disadvantage was compensated for by the better price which was received for English barley. Continuing, Mr. Toll said English barley was just as good as oats for eradicating take-all. In reply to a question from Mr. M. McAuley, Georgetown, as to when he advised sowing, Mr. Toll said English barley should never be sown before the end of May. Sowing should be continued from that time onwards through the month of June. The Principal of the Roseworthy Agricultural College (Mr. W. J. Colebatch) said farmers should not be hidebound on the question of rotation cropping. The policy of the College had been to advocate a variation in the system of cropping. The three-course rotation at the College for a number of years had reduced the amount of super necessary to give maximum wheat returns. The policy of the farm had been directed towards increasing the stock carrying capacity of the farm. The stock carrying capacity had increased to such an extent that they were able to work the three-course rotation more profitably than the two-course rotation. The Director of Agriculture (Professor Arthur J. Perkins) said he was surprised at Mr. Toll expressing faith in English barley as an eradicator of take-all, and he certainly would not advise the growing of barley in take-all districts. Oats seemed to be the more secure crop of the two.

THE IMPROVEMENT OF PASTURES.

The Manager of the Kybybolite Experimental Farm (Mr. L. J. Cook) read the following paper:—

Because there is a demand for increased production, and an opportunity of participating in present good prices, it behoves all stock breeders and keepers to attempt to secure more from their pastures, and the above subject should be thoroughly considered by them. I feel that more competent minds could have dealt with the subject in a more able manner than myself, but trust that the remarks to follow will serve to introduce a good discussion on the subject, and incidentally to cause a greater increase in attention to pastures throughout the State.

There are two general classes of pastures, namely, temporary and permanent pastures. Temporary pastures are those that are broken periodically for crop production, whilst permanent pastures usually occupy land that is not arable, or not easily cropped.

It is of interest to note that many live agriculturists have recognised the value of improving both these classes of pasture, and have secured good results. However, the work is as yet only in its infancy

in this State, and there is room for a wide expansion, and subsequent large increase in the amount of stock carried, a larger and improved production of wool, meat, and dairy products.

MEANS OF IMPROVING OUR PASTURES.

1. Top-dressing or manuring of pastures.
2. Encouraging the good natural and naturalised grasses and edible plants, and checking the spread of plants of inferior feeding value.
3. Establishing grasses and plants that will thrive and produce more and better feed than the natural plants.
4. Systematic handling of stock, and management of pastures.
5. Cultivation.

1. *Top-dressing or Manuring of Pastures.*—Practically all farmers nowadays realise the value of fertilisers in the growth of their crops, and they should easily recognise that fertilisers are just as important for the best development of grasses, clovers, and pasture plants. Scientists have proved that all plants contain the same chemical elements, but in slightly varying proportions. Hence, when your land produces better crops of hay or grain by the application of superphosphate, you can also rest assured that that same land will produce better crops of grass or herbage by a dressing of superphosphate, or if liming your land improves the crops, so also will it improve the pastures on it. Apart from the theoretical point of view, many results of practical tests are now available in the Commonwealth and New Zealand to show that not only is the quantity, but also the quality of feed very much improved by fertilising. The former is proved by the increased number of stock that can be carried per acre, and the latter by the better quality stock and products received, combined with the very much greater preference stock have for pasturing on fertilised areas.

With small exceptions, practically all soils in South Australia are naturally deficient in phosphates, and respond well to applications of phosphatic fertilisers. These fertilisers are the ones mainly used for top-dressing in this State. Some sour soils also benefit from liming, but practically all require phosphates. Water soluble phosphates are the best class to use in districts with less than 20in. rainfall, but in heavier rainfall areas, especially where there is a tendency for sourness in the soil, comparatively small applications of water soluble super are advisable initially, but heavy dressings of crushed rock phosphate—acid soluble phosphates—are recommended in conjunction with the super. The super is quick in its action, and causes good initial growth, but the ground rock is very lasting in its effect. At Kybybolite a heavy dressing of low grade rock phosphate (equal to about 4cwts. of the present day 82 per cent. high grade rock phosphate) given in 1919, has maintained a gradually improving effect on the natural pasture. In 1921, two years after top-dressing, the plots carried 1.42 sheep per acre, whereas in 1923, four years after the application, the same plots carried 1.72 sheep per acre, an increase of over $\frac{1}{4}$ sheep per acre, and it must be noted that 1923 was a much wetter season, and generally not such a good feed year as 1921.

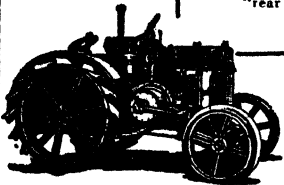
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Rock phosphates will not aggravate any sourness that may be present in the heavier rainfall districts. If superphosphate only is used continually on sour soils, it will eventually be found necessary to lime.

With reference to nitrogenous and potassic manures, very little consistent result has up to date been received from their application to pastures, and they cannot be generally advocated at present, excepting in the wetter districts, where every care should be taken to make the most use of all animal droppings, and organic matters to increase the humus content.

TIME TO APPLY FERTILISER.

The best time to top-dress land is in the early autumn, with the first rains of the season, the plants are then able to utilise the fertiliser during the whole period of their growth; moreover, they are helped to make good root growth before the wet winter months set in. Later applications are beneficial, but maximum results cannot be expected during the immediate season. For temporary pastures, much expense in labor can be saved by giving heavy fertilising dressings with crops, so that fertiliser, not used by crops, can be carried over in the soil and subsequently used by pasture plants.

QUANTITY TO APPLY.

Experiments with the application of phosphates in South Australia have not yet been definitely concluded to show the limit of phosphatic requirements of its soils, so that the quantity to apply is largely a matter of economics. Phosphates can be applied until they have no further effect on growths of the soil, and until such a point is approaching, one need not fear that good repayment will not be secured. A soil rich in phosphoric acid would contain 0.1 per cent. or 3,250lbs. in the top foot of an acre of soil. Most South Australian soils contain less than 0.05 per cent., and are poor in phosphoric acid. Therefore we can safely apply 0.05 per cent. or 1,625lbs. phosphoric acid, that is equal to about $3\frac{1}{2}$ tons of 45 per cent. super per acre, or 2 tons 82 per cent. ground rock phosphate over and above what has been taken from the land by crops or stock, before the soil would become near rich in phosphorus. 1cwt. superphosphate, or its equivalent per acre per annum, cannot be looked upon as too much for pastures. With permanent pastures heavy dressings of phosphates given in periods of four to five years would be more economical in that much time would be saved in applying.

Manure distributing machines are now on the market, which enable the work to be done quickly with one horse. The cost of the work of top-dressing should not exceed 1s. per acre.

Where lime is used on pastures, dressings of 1 ton per acre every ten years are advisable. Smaller applications at more frequent intervals have a slower action, and do not give results so quickly.

RESULTS OF TOP-DRESSING.

The variations of growths received on top-dressed natural land has been most marked. Land that in the natural state carried only a poor growth of natural grasses, which comprised mainly wallaby grass with a considerable amount of useless juncus, mosses, and other small plants, when improved with fertilisers became quite changed. Plants assume and maintain a bright healthy appearance in marked contrast to the dull unhealthy green of the unimproved natural grass, and withstand frosts, and exigencies of the weather very much better. The plants of wallaby grass develop splendidly, easily to three and four times their former size, whilst the naturalised clovers, such as hop, woolly, cluster, and trefoil appear thickly amongst the grass, and have in the course of four or five seasons considerably reduced the amount of useless juncus, and completely crowded out the moss and small useless plants. English dandelion has made its appearance, and makes quite a lot of growth during the spring, summer, and autumn months.

Also, on previously cultivated land, the development of naturalised clovers is very marked where liberal fertiliser applications have been given. Cape weed quickly establishes itself on cultivated land, but phosphates stimulate the clover growth, and enable them to hold their own against the weed, and thereby provide a handy variety in the feed.

Clovers provide the best of green feeds, and help materially in providing a balanced feed for pasturing stock. Top-dressed pastures start growth earlier in the season, make quick good early root growth, and therefore are able better to withstand wet winter periods, and to more quickly recover from setbacks due to weather.

Finally top-dressing increases the available mineral content of the soil, which can be readily absorbed by plants, which in their turn provide to stock, and especially to growing stock, those all-important mineral foods—phosphates and lime.

There are not many practical tests sufficiently advanced in this State to enable definite results to be quoted in figures. However, before leaving the top-dressing question, I would like to quote the results secured from top-dressing natural pasture at Kybybolite during the past five seasons.

The actual average annual number of sheep carried per acre during the last three seasons has been as follows:—

	Sheep per acre
1. Lime and phosphate dressed plots	2.13
2. Phosphate dressed plots	1.45
3. No manure (check plot)	0.91

In feeding off plots, it is not practical to graze plots continuously, but all plots have been fed consecutively during the year; those having better growth have had more sheep turned in at a time. Every effort has been made to remove sheep as soon as each plot has been grazed to a reasonably fair even amount.

Estimating on present values of fertilisers, we find that the heaviest feeding plot, which received 1 ton lime for 10 years (equivalent of 2cwts. each year), and 1cwt. 36 per cent. water soluble superphosphate annually, receives a money value of 10s. 3d. per acre per year. No. 2, the phosphate dressed plots, have received the equivalent of 2cwts. of low-grade phosphate rock per acre per year, and this, based on the present unit value of rock phosphate, is worth 3s. per acre.

Allowing the annual value of a sheep to the farmer to be 20s., the profit from each acre has been as follows:—

	Total value grazing.	Value less cost manure.	Profit per acre over no manure.
	£ s. d.	£ s. d.	s. d.
1. Lime and phosphate plot	2 2 7	1 12 4	14 2
2. Phosphate dressed plots	1 9 0	1 6 0	7 10
3. No manure	0 18 2	0 18 2	—

Apart from these increased money value returns, we can safely state that the fertilised plots carry stock in much more healthy condition. In fairness to superphosphate, or water soluble phosphate, it is necessary to note that the results received from the phosphate only dressed plots, have been secured from applications of finely ground rock phosphate, of which only very small proportions of its phosphate are soluble in water or weak acid solutions. The actual analytical tests of the rock phosphates used are as follows:—

	Per cent.
Water soluble phosphate	0.02
Citrate soluble phosphate	1.55
Acid soluble phosphate	17.07

If wholly water soluble phosphate (super) were applied, quicker and probably heavier immediate returns would be received, but under our conditions at Kybybolite we would be still faced with the vexed problems of sour soil, and in such districts, if liming is considered too costly, I would advise using acid and water soluble phosphates in the proportions of three or four to one.

2. *Encouraging the Good Natural and Naturalised Grasses and Edible Plants, and Checking the Spread of Plants of Inferior Feeding Value.*—We have already shown what a great part topdressing plays in helping the growth of good grasses and clovers, &c., and much further improvement can be wrought by careful attention by the farmer and grazier. Noxious weeds only take the place of more serviceable plants, and wherever possible should be repressed. Liming and manuring help considerably to sweeten a soil, and in sweet soil good, useful plants are more able to hold their own against those plants liking sour soil conditions, and which usually are of poor feeding value. With temporary pastures at times, unsatisfactory weeds become very thick, and it is often necessary and wise to put the fields under cultivation to clean them.

3. *Establishing Grasses and Plants that will Thrive and Produce more and better Feed than the Natural Plants.*—This is a work that in some districts has led to a lot of improvement in pastures, and is work on which many trials and researches could be made with advantage. In our wetter districts with over 20in. rainfall much success is being secured from subterranean clover and Wimmera rye grass. Subterranean clover especially is thriving wonderfully well, where it has been given an opportunity to establish, and not been stinted for phosphatic manure. Unlike most clovers it appears to thrive really well without the aid of lime, and promises to give results at a cheaper cost than applying lime. It is an annual, but seeds profusely, and adapts itself to most types of soil. Mr. Spafford has recently written and issued a very complete pamphlet on this clover, with which all stock owners should be familiar, as undoubtedly subterranean clover is most promising for pasture improvement.

Wimmera rye grass is also an annual that will reseed itself well. Our experience has been that if allowed to seed, and given phosphatic fertiliser, it will thrive, and maintain itself permanently in the fields. With subterranean clover it makes a very good mixture of fodder.

Alsike clover is giving promising results in the wetter districts. It is quite suited to our South-East, is a perennial, and grows more in the hotter months than subterranean, and, given a comparatively wet summer, will give a large amount of summer and autumn feed. Strawberry clover is a useful clover to grow on the more or less swampy land. It is a really good feeding clover, and should suit many acres in our lower South-East. These latter two clovers could well be grown in mixture with English rye grass.

Speaking generally for districts with 20in. rainfall or more, a mixture of subterranean clover and Wimmera rye grass is the hardiest, and can be strongly recommended. On some of the better soils in these districts Alsike clover and perennial rye grass could be included in the mixture. For the very good soils a mixture of a number of clovers and grasses would be advisable, such as the following:—White Dutch Clover, Alsike Clover, Strawberry Clover, Cow-grass, Subterranean Clover, Sheeps Burnet, Cocksfoot, Tall Fescue, Creeping Bent, Perennial Rye, Sweet Vernal.

In districts with rainfall below 20in., and where usually there is no lack of lime, naturalised clovers and other herbage quickly establish themselves on the land, and although an outlay on fertiliser for top-dressing would pay, it is doubtful whether the expensive purchase of seed would be warranted. In the newer districts in the mallee I feel sure that much valuable feed can be secured by establishing and encouraging King Island Melilot and Trefoil. These are good, quick-growing annual legumes, and readily establish themselves on land well supplied with lime.

4. *The Systematic Handling of Stock and Management of Pastures* has in an indirect way something to do with the improvement of pastures, or at least the prevention of the deterioration of them. Much harm can be done by over stocking. Good judgment is required in

the feeding of a pasture. It is always better to remove the stock a few days too soon than a few days too late, both for the benefit of the pasture and for the stock. Whilst on this point mention must be made of the rabbits. They not only deprive the sheep of a lot of feed, but they consume the sweet and better parts, and eat plants too close to their roots.

Subdivision of fields is an important factor. Four 50-acre fields would carry more stock than one 200-acre field, and more than return interest and depreciation on costs of fencing.

5. *Cultivation*.—Cultivation of permanent pastures in this country is little availed of, but in older countries much benefit is derived from an occasional stir, to let air into the soil, and incorporate stock droppings in the soil. Many of us know what a strengthening a cultivation gives to a lucerne-plot, and benefit would be derived by a light breaking of the surface of ordinary pastures occasionally, using a sharp-pointed harrow or narrow-tynd cultivator.

In conclusion, we can look upon the top-dressing of pastures as the most important means of improving them, with the establishment of introduced clovers, grasses, or other plants as a very good supplement.

DISCUSSION.

Mr. W. Loller, Naracoorte, in opening the discussion, congratulated Mr. Cook on the very fine paper that he had submitted to Congress. Top dressing of pastures had been sadly neglected in South Australian farming operations. He had sown Subterranean clover mixed with barley, and had obtained an excellent crop of green feed. Mr. J. Hudd, Black Springs, asked, "How long before Subterranean clover becomes established and can be used for pasture"? Mr. Cook said the answer would depend largely on the quantity of seed that was sown. If the clover was sown with rye grass and fed very carefully it could be used the first year. Sowing should be done with the first rains at the rate of 4lbs. of rye grass and 3lbs. of Subterranean clover per acre. That would give a good stand of feed. Mr. E. Pearson, Brinkley, asked: "Can Subterranean clover be successful in a district with a 13in. rainfall"? Mr. Cook said he was very doubtful. Clovers favored localities that received a good rainfall, but he advised Mr. Pearson to make an experiment on a small scale. Mr. W. T. Vigar, Mount Pleasant, asked whether it was necessary to cultivate the land before sowing artificial grasses. Mr. Cook said it paid best to work the land so that the clovers and grasses would not have to fight weeds. Unless the land was cultivated only a very poor germination would be obtained. For the price that had to be paid for artificial grasses and clover seed it was certainly advisable to work the land before sowing. Mr. E. Stevens, Mount Barker, said Mount Barker was the home of Subterranean clover, and he thought it was a mistake to sow other seeds such as rye grass with the clover, because the long, penetrating roots of the rye grass would choke the clover. Subterranean clover, when once well established, would crowd out other inferior grasses and weeds. Subterranean clover and top dressing pastures had enhanced the value of holdings in the Mount Barker district very considerably, and he had no hesitation in saying that it would increase the carrying capacity five

times. Mr. Cook informed Mr. D. Jonas, of the Roberts and Verran Branch, that he had had no experience with couch grass as a suitable plant for binding drifting soils. Mr. O. George, Coonalpyn, asked whether the Government had tried "Ephos" super. Mr. Cook said it was only in the autumn of last year that the Department had procured that brand of manure, and it was too soon to give any results of the experiments that had been conducted. Its effect on pastures was just as marked as the other supers. Mr. R. Campbell, Tantanoola, asked: "Is not the price of lime too high to permit of its use"? Mr. Cook said liming was a costly operation, but the Government had found it payable. The cost by the time the lime was applied to the land was about £3 per ton. Where Subterranean clover could be grown he would not recommend applications of lime on account of the cost. Mr. H. Fisher, Tatiara, asked what preparation land intended to be sown to Subterranean clover should receive. Mr. Cook advised early, shallow ploughing, no deeper than 2ins. The land should then be harrowed, rolled, and the seed sown, or the land could be harrowed after ploughing, the seed broadcasted, and the land harrowed after seeding. Mr. A. Shannon, Keith, said top dressing had passed the experimental stage, and he suggested that each delegate should leave the Congress with the firm intention of top dressing a small portion of land. He was quite satisfied that top dressing was going to revolutionise farming practices of South Australia.

TRACTOR v. HORSES ON A 1,000-ACRE FARM.

The following paper was submitted by Mr. H. E. Ottens, of the Brinkworth Branch:—

After working a tractor for one and a half years I have come to the conclusion that power farming is an absolute success. Assuming that the farm is situated not more than three or four miles from the nearest railway station, it could be worked with one tractor and two horses, or, on the other hand, with 18 horses, but the latter would require an extra man throughout the year.

To put the horses on an equal footing with the tractor it would be necessary to hand feed them all the time, excepting for three months after harvest. Thus you would be able to crop one half and fallow the other half every year. Side lines are not taken into consideration because they would be practically the same in each instance.

In the comparisons set forth below I will not include the expenses for machinery and superphosphates, &c., because they would be the same in both cases. An annual average of seven bags per acre is taken and is quoted at 11s. per bag, after allowing 1s. for the bag itself.

The expenditure involved in the use of the horse teams would be as follows:—

	£
18 horses at £25 per head	450
Harness (including wagon, saddles, &c)	90
Galvanized iron stable and chaff shed	300
Engine and cutter	200

Making a total initial outlay of £1,040

<i>Expenses.</i>	£
Depreciation on horses and harness at 10 per cent. . .	54
Depreciation on stables and plant at 3 per cent. . . .	15
Interest on both at 5 per cent.	52
Wages for extra man per year	160
Total	£281

Of the 500 acres cropped 80 would be cut for hay, and 10 acres sown with oats reaped, which would be fed to the horses. The remaining 410 acres would yield 2,871 bags of wheat; allowing 200 for seed would leave 2,670 bags, worth £1,469; deducting the £281 expenses leaves a remainder of £1,188.

The initial outlay for the tractor would be:—

	£
One tractor with extension outfit	685
Two horses and harness	55
Chaff shed and shed for two horses and tractor	100
Chaffcutter	40
Total	£880

<i>Expenses.</i>	£
Depreciation on tractor and horses at 10 per cent. . .	74
Depreciation on shed and cutter at 3 per cent. . . .	4
Interest at 5 per cent.	44
Allowance for repairs to tractor	30
Kerosine, oil, grease, &c.	200
Wheat carting at 6d. per bag	80
Total	£432

Of the 500 acres cropped 20 would be cut out in tracks. The remainder would yield 3,360 bags, leaving 3,160 for sale, valued at £1,738; surplus chaff sold at £4 per ton, £60, making a total of £1,798. After deducting expenses the remainder will be £1,366, leaving a surplus of £178 per annum in favor of the tractor.

With the fuel expenses allowed for the tractor, the land would be worked as follows:—Ploughed once, harrowed and cultivated twice before and once after harvest, the seed put in with a combine, and the crop taken off with a harvester.

The farm from which these figures are compiled would consist of the same class of soil as that on which I am working, which is of a medium heavy nature.

OTHER VIEWS.

A delegate said he was not prejudiced against the tractor, but he thought the discussion was rather premature, because the tractor had not yet proved itself. The horse had proved itself, and before the

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use of the tractor could be advocated it would be necessary to compare the tractor with the horse for a longer period. Another speaker said that whilst tractors were being boomed in Australia, Canada and America—where tractors had been in almost general use—farmers were scrapping the tractor and going back to horse power on the farm. Mr. R. Hicks, Yaninee, said that in the drier districts, such as on the West Coast, the tractor was a great help to the farmer. The expense of carting large quantities of water had been almost eliminated where a tractor was worked. On a new farm it was unnecessary to do a lot of fencing to keep the horses out of the crop. Mr. D. Butler, Butler, considered that the important point in the argument was, "How long is the tractor going to last"? Those farmers with whom he was acquainted who had bought tractors were sorry. One of his neighbours who owned a tractor, had told him on no account to sell his horses and buy a tractor. Mr. W. Loller said he had been working a tractor for three years, and it had not cost him £3 for repairs. It did the work of a six-horse team, and it was a good proposition for a small farm. The tractor, he considered, made a better job of ploughing than horses. Mr. T. H. Howlett, Arthurton, said it had been found that in sandy soils the farmer could not do without a team of horses. Farmers in the Arthurton district were leaving their tractors in the sheds and buying teams. There were also several farmers in his district who kept a team of horses as well as the tractor. The Director of Agriculture (Professor A. J. Perkins) stated that his experience was that many farmers had been compelled to give up the tractor and return to horse teams. Anything that would lessen the cost of production would be welcomed by everybody, but experience had shown that the tractor was more expensive than horses. In a tractor trial that had been conducted at Turretfield, the cost of ploughing with tractors had been double that of working with horses. He could not visualise the farm that could be worked by a tractor without the assistance of horses. He agreed with one of the previous speakers that the discussion was rather premature.

PHYLLOXERA IN RELATION TO THE SOUTH AUSTRALIAN VITICULTURAL INDUSTRY.

Mr. D. G. Quinn, Viticultural Instructor, Agricultural College, Roseworthy, read the following paper:—

When I received the request of the organising committee to deliver an address before the Viticultural section of the Congress, I felt greatly honored, but was faced with the difficulty of finding a subject of general interest, which had not been fully and ably dealt with in the past.

"In choosing my subject, namely phylloxera, I have selected a disease which is unknown in this State, but the danger of it crossing the Victorian border is ever present, hence it behoves us to be well acquainted with the menace. After introducing the subject to you,

by briefly describing the life history and habits of the insect, I shall touch on the present-day methods of coping with the trouble, and will close by concisely describing the Yema field graft, which will be widely used, should the re-establishment of our vine-yards upon phylloxera-resistant stocks ever become necessary.

INTRODUCTION AND SPREAD OF THE DISEASE.

Phylloxera, a native of America, was unwittingly introduced to Europe some time between 1855 to 1863. The European vine was an excellent host plant, and the insect, like the English rabbit when introduced to Australia, proved extremely prolific under its new environment. It spread with comparative rapidity to almost every vinegrowing country in the world, and was observed at Geelong in Victoria, in 1875. It gradually spread through the Bendigo, Goulburn Valley, and Rutherglen districts into New South Wales, even though considerable sums were expended in trying to eradicate it.

In 1885 the Vine, Fruit, and Vegetable Protection Act was passed, but it was not until 1894 that regulations prohibiting the introduction of vines were proclaimed. Prior to this date it was quite legitimate for any traveller to bring a contaminated plant from a phylloxerated area into South Australia. It is remarkably fortunate for us, that the pest was not introduced in such a manner at this period. With the passing of the above Act, stringent restrictions were placed upon the introduction of plants, and coupled with careful inspectorial work and good fortune they have proved an effective barrier. However, this barrier has some unavoidably weak points, and, although it has proved satisfactory in the past, we must not look upon it as impregnable. Interstate motor traffic is becoming common and this may be looked upon as a fresh source of danger in regard to the introduction of plant disease.

In 1899, by virtue of the Phylloxera Act, an honorary board came into existence to watch this disease in the interests of the vignerons. More will be said about the activities of this board a little later.

LIFE HISTORY OF THE INSECT PHYLLOXERA VASTATRIX.

With regard to the disease itself, little need be said, other than the fact that within a few years of infection the attacked vines become unproductive and gradually die out, no insecticides proving effective against it. Briefly the life cycle of the insect on American vines may be described as follows.—From eggs laid by the “sexual form” the “gall form” arises and lives on the young foliage of the vines, forming swellings upon the leaves, wherein eggs are deposited. The gall form in this way may give rise to six or seven generations in a season, parthenogenetically (non-sexually). As each insect is capable of laying up to 600 eggs, it will be seen that the reproductory powers of the insect are enormous.

Towards the end of the season the insects migrate to the roots. Here they change slightly in appearance and are referred to as the “root form”. They lie dormant throughout the winter, and renew

their attack on the root system as the spring approaches. During this stage the insects are still depositing eggs non-sexually. In the following spring some of the insects will have advanced to the "nymph form" and will be showing a pair of rudimentary wings. Under suitable circumstances these insects come to the surface, shed their outer coating, and appear as winged insects.

The "winged form" may be carried long distances by the wind and it is largely responsible for the occurrence of fresh outbreaks at a considerable distance from the source of the trouble. This insect alights upon the foliage of a vine, feeds for about 24 hours, and then deposits two to four eggs. These eggs are of two sizes. From the larger appear females and from the smaller males.

They are both devoid of digestive organs and after fertilization the female deposits an egg in the bark of two-year old wood. This is the only sexual reproduction in the life cycle and from it arises the regenerating insect. Both in Europe and Australia the gall form is rarely seen, the insect apparently missing this stage of the cycle.

METHODS OF SPREADING.

In isolated countries the disease can only be introduced upon vines or in soil contaminated by it.

In countries already infected it spreads gradually through a district by means of the winged form, and it also may be carried in fragments of soil adhering to boots or wheel of vehicles. To a large extent it spreads in a vineyard through contact with the roots of adjoining vines, the insect deserting a languishing vine for the more succulent roots of the surrounding vines.—The fact that it spreads through the soil roughly in an ever increasing circle, leaving unthrifty vines in its path, gives good reason for being suspicious of such patches, although obviously it is not an absolute proof of infection. To be positive on the matter, the roots of the suspected vines must be examined. If the insect is present, the roots will be swollen and distorted, and the insect itself may be seen with the aid of a low powered microscope.

METHODS OF CONTROL.

In the early days of the disease, every conceivable treatment was tried in order to combat the pest. Efforts were made to interfere with the life cycle of the pest by destroying the winter egg laid by the sexual form on the two-year old bark, with various winter swabs. The treatment was feasible, but for some reason broke down when put into practice.

In isolated cases where it was found possible to submerge a vineyard for about 40 days during the winter, the insect was often eradicated, but circumstances seldom allow of this treatment. Carbon bisulphide also has been used with reasonable success in light open soils which allowed the volatilized fumes of the sulphide to diffuse freely through

their mass. Experience gained in Victoria and New South Wales, however, goes to prove that very little faith can be placed in any of the foregoing treatments, hence I will not attempt here to explain them minutely, but will simply assure you that if at any future date *Phylloxera* is located in South Australia, reasonable but energetic efforts will be made to stamp out the disease. In all probability these efforts will fail, in which case we will have to cope with the disease by grafting our vines on to a root stock not vulnerable to the disease. This brings us to the question of using the hybrid vines commonly termed resistant stocks.

RESISTANT STOCKS.

A brief introduction to this phase of the subject will possibly not be out of place here.

Phylloxera, being a native of that part of Northern America, east of the Rocky Mountains, it may be assumed annihilated all species of the genus *Vitis*, vulnerable to its attack, hence it was considered quite reasonable to use certain of those American vines which had survived, as stocks for the scions of the European vine.

Owing to the distant affinity existing between the various species, the results at the outset were not wholly satisfactory.

The next advance occurred when an attempt was made to evolve a hybrid from a resistant and a European species. It was thus hoped to combine the desirable characteristics of both parents in the one plant and so turn out a "direct producer," that is, a vine capable of surviving the attacks of the pest and bearing good fruit.

This aim, however, has not yet been fully achieved, but the indirect outcome of these early experiments proved of vast importance in another direction. Some of these hybrids, owing to their partly *Vinifera* parentage, proved more adaptable as stocks for the European scions, and yet inherited the resistant qualities of their American parent. Furthermore, many of the most valuable of the American species were found to demand certain climatic and soil conditions, and outside of such, proved unthrifty. Those engaged in the work of hybridization so blended the different characteristics together into one vine that this undesirable feature was also more or less overcome. To-day we are indebted indeed to numerous continental investigators for the colossal difficulties that have been overcome in making the reconstitution of vineyards on resistant stocks a sound and reasonably simple matter.

Out of a great number of American vine species the following proved to be the most valuable in the early days, and their outstanding characteristics may be summed up thus—

1. *Vitis riparia*.—This vine is very resistant to *Phylloxera*. It grafts easily with *vinifera* varieties, but the graft is not of a durable nature, the scions outgrowing the stocks after a lapse of 15 to 20 years. The photos. below depict this weakness clearly. The *Riparia*

has a shallow habit of rooting and only thrives under cool rich conditions. It was the first stock successfully used in the early days, but was gradually abandoned in favor of the *Rupestris*, as its limited life became obvious.



The four unions depicted on the left are on hybrid stocks. The two on the right are on pure American stocks, viz., (5) *Riparia Gloire* and (6) *Rupestris* St. George. Note the tendency of the scion to outgrow the stock in the latter instance (5 and 6).

(Plates from Bulletin 331, Univ. of California.)

2. *Vitis rupestris*.—This is a deep-rooted, drought and disease resistant species, and a selection from it—the *Rupestris* du Lot—is still valued, because the Mataro, Doradillo, and Tokay scions give satisfaction on it. The stock, however, only thrives on heavy, deep soils which are fairly free of lime in a fine state of division. This stock for general purposes remained largely in favor for a long time, but was gradually superseded by certain hybrids.

3. *Vitis berlandieri*.—This species is hardy and resistant, and is better suited to limestone or chalky country than the above stocks. The pure species, however, has been of little value owing to the difficulty experienced in grafting and rooting the cuttings.

THE POPULAR STOCKS OF TO-DAY.

Owing to the fact that not any of the above species fulfil the general requirements, hybridization has been encouraged, and research in this direction has been in progress for nearly three-quarters of a century. The most successful stocks which have been evolved by this process may be summed up as follows:—

A. R. G. No. 1 (*Aramon x Rupestris ganzin*).—This is a strong vigorous stock, well suited to unite with strong scions of such kinds as the Grenache, Shiraz, Currant, Sultana, and many varieties of table grapes.

Owing to its partly *vinifera* parentage, its degree of resistance is slightly low for dry, well-drained slopes but otherwise it appears to adapt itself to almost any locality or soil. It suffers less from faulty drainage than most other stocks, and it is recognised as the best all-round stock wherever irrigation is practised.

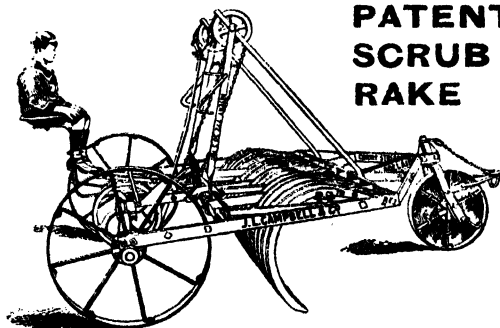
No. 1202 (*Mataro x Rupestris*).—This vine is also well adapted to irrigated areas. It is hardy, but under dry conditions it is less

resistant to Phylloxera than the A. R. G. The Muscat, Pedro, Mataro, and Doradillo do well on this stock, but the Tokay, Riesling, and Zante Currant fail to give satisfaction.

The above "Vinifera-American" hybrids are less resistant than the purely American hybrids.—The degree of resistance which a stock must possess varies with the different soils. It is a well known fact that vigorous vines are less subject to the ill effects of Phylloxera than weak vines, hence soils which promote strong growth will allow stocks of comparatively low resistance to give satisfaction. Such soils are generally sandy and deep, overlying an open subsoil, and only moderately supplied with lime in a fine state. Soils containing an excess of fine chalky limestone, stiff clays, or shallow dry soils, induce growth of a somewhat weak nature and therefore necessitate the use of stocks possessing a high degree of resistance.

It might be well to mention here that a vine is not killed because the phylloxera robs it of too much sap, but because certain organisms of decomposition, present in the soil, are enabled to enter through the wounds and cause the roots to decay. The European vine root is soft and open in texture, and decays easily.

The roots of the resistant American vines are more tough and fibrous in nature, and although the insects attack these roots, they do not thrive upon them, nor do they cause them to decay.



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From this it can be seen that when a cross between a European and a resistant vine is made the resulting degree of resistance possessed by the hybrid will be lower than that of the American parent, but is generally sufficient under conditions favoring strong growth.

The stocks 3306 and 3309 being crosses of two pure American species (*Riparia x Rupestris*) are more resistant than the Franco-American crosses A. R. G. I. and 1202, hence they are largely used in the non-irrigated areas. They show satisfactory affinity to the European scions and do well in most soils. They will not, however, tolerate an excess of lime in a fine state. For soils that contain a considerable amount of lime in a fine state of division the Berlandieri stocks must be used.

These stocks are somewhat difficult to root, and grow slowly during the first two years of their life.

420 A (*Berlandieri x Riparia*).—This is another hybrid of pure American strain and is a very hardy drought resistant stock that is rapidly coming into prominence. It shows all-round affinity and gives good results under fairly dry conditions.

The 41 B (*Chasselas x Berlandieri*).—A European-American hybrid resembles the 420 A fairly closely. Both these hybrids make little top growth at the start, but eventually produce vigorous fertile vines.

In addition to the stocks mentioned there are others which show promise, but they have not been sufficiently tested under Australian conditions to enable one to pass any definite remarks upon them.

ADEQUATE SUPPLIES OF RESISTANT WOOD AVAILABLE.

By way of interest it may be well to mention that the Phylloxera Board, being familiar with the fact that the pest in question may invade our territory, without notice, at any time, deemed it advisable to establish or purchase a "mother vineyard" for the production of resistant wood in an adjoining State, in order to assure the availability of this, immediately it was required. In the early part of this year the New South Wales Viticultural Station at Howlong was purchased under very favorable terms. This station produces sufficient wood to reconstitute at least 500 acres of vineyard annually. As the disease in question does not spread very rapidly, and, furthermore, may be confined to the district where the outbreak occurs for some time, the above supply may be considered satisfactory.

This mother vineyard is to be maintained on economical lines until required, and the step taken by the Board may be looked upon as a form of insurance for minimising the set back the industry would receive with the advent of Phylloxera.

GRAFTING.

The final matter I wish to deal with is the propagation of these resistant vines. Should an outbreak of the disease occur in any given district the European vines would probably remain productive for from three to six years, and parts of the district might not

show the disease in an advanced stage for a much longer period. Provided the disease was observed at an early stage the Phylloxera Board is bound to make genuine efforts to annihilate it, but most likely the disease will be in our midst some years before discovery, and in this case, reconstitution will be the only logical course of procedure. As a block becomes unprofitable, it should be cleared, worked up, and replanted with rooted resistant vines. It is often said that the varieties on resistant stocks yield more satisfactorily than the old varieties which previously occupied the land, but this improvement is most likely due to the rest the land gets and the youthful vigor of the renewed vineyard. Cuttings from resistant vines will be available when required, and for the most part they will be rooted and grafted by the vignerons himself.

A vineyard on resistant stocks may be established in one of two ways:—

1. By the use of bench-grafted rootlings.
2. By the plantation of resistant rootlings, and subsequently grafting them to a European variety.

The term "bench graft" is used when the scion is grafted on to a resistant cutting, calloused by artificial heat, rooted in the nursery, and planted in the field in the following year.

In the case of the second method, or "field grafting," the resistant cuttings are rooted in the nursery, planted out in the following winter, and cleft grafted in the spring, or "Yema" grafted late in the summer.

The "Yema" method of grafting is comparatively new in Australia, and prior to its introduction field grafting was not held in very high esteem.

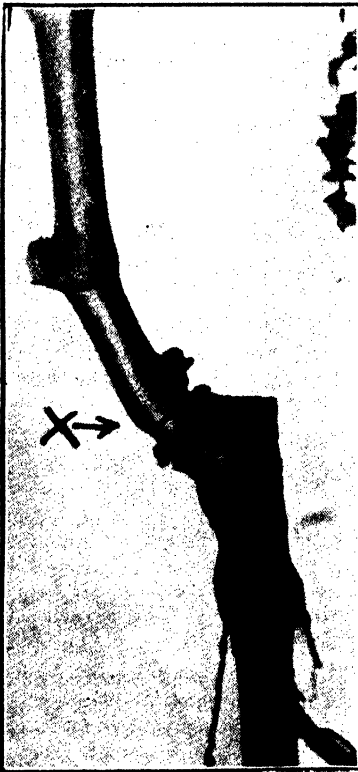
I will describe the popular "Yema" form of grafting here as concisely as possible in order that those interested may have plenty of time to practise, and become efficient in the art before the necessity for its use arises.

This mode of grafting was introduced from the south of Spain to Australia in 1908 by Mr. Francois de Castella, and since that time it has become continually more popular in Victoria and New South Wales. It is very simply performed and results in a better union than the cleft graft method gives.

"Yema" is the Spanish word meaning an "eye" or a bud, and the operation simply consists in grafting a single bud from a European vine on to a rooted cutting of a resistant vine. The grafting operation may be performed between the end of January to the middle of March, or in other words as soon as the annual wood changes from green to brown. For a satisfactory union to occur, the sap in the stock must be moving quietly, hence a rain or a watering 10 to 14 days prior to the operation is most desirable. Poor results must be expected if the ground is very dry at the grafting period, hence field grafting may be adopted in the wetter districts, but in the dry districts it may be advisable to confine this phase of the work to a

nursery patch which can be lightly irrigated when necessary. In this case the cuttings should remain two years in the nursery, all told.

My illustrations, I think, show the procedure sufficiently well to do away with a long description of the operation.

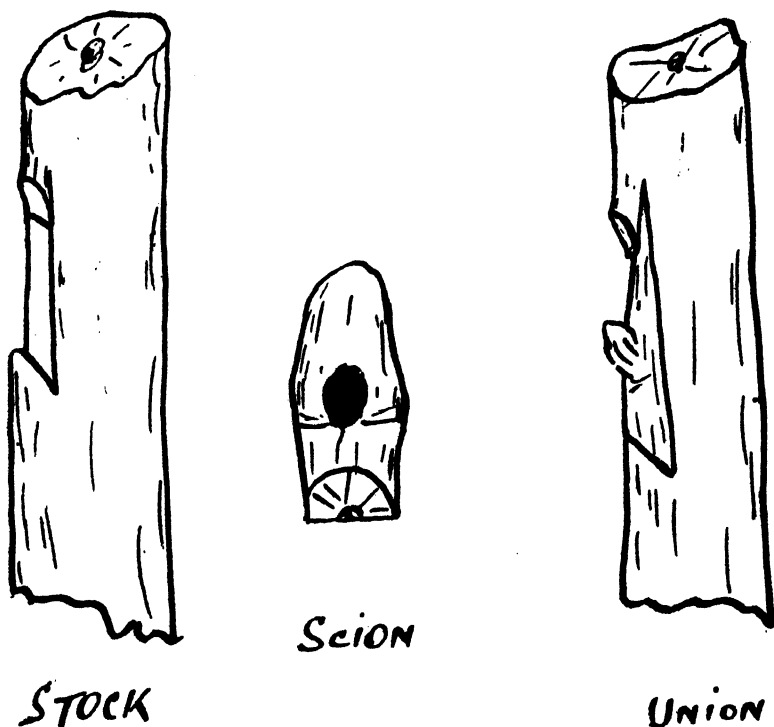


[Photos by Mr. Pritchard.]

Showing one year's growth from the Bud. (X marks the Yema Bud.)

A scion is cut from a cane of similar diameter to the stock, inserted into the stock two or three inches above the ground level, bound into position with some material that will rot rapidly, and then without removing any of the stock foliage, a mound of loose earth is thrown over the vine so that the graft is covered to a depth of 8 to 10 inches. The graft knits during the autumn, but remains dormant. Late in the winter the mound and the stock shoots are removed with the exception of one spur above the graft. After the graft has made a little growth the stock may be reduced back in the usual manner.

At this period the success or failure of the operation is easily seen, and where the latter has occurred the stock may be cleft grafted.



The successful grafts must be carefully watched in the early spring, because we have only one useful bud, and this must be protected against such pests as the cutworm and the rabbit. The growth should also be staked and no suckers from the stock allowed to compete with it.

I shall close, gentlemen, by asking those of you who are interested in vinegrowing, to become familiar with this graft, between now, and, we hope, that distant date when we shall find ourselves facing the problems of reconstitution.

DELEGATES VIEWS.

During the discussion which followed, Mr. H. S. Taylor (Benmark) said that the people on the River had taken a very keen interest in that subject during the past few years. He emphasised the necessity for studying the intricacies of the question of the reconstitution of vineyards as early as possible, in view of the fact that phylloxera might be introduced at some future time.

Professor Arthur J. Perkins said the actual introduction of the disease was not the only danger. At present there were about 50,000 acres of vines in South Australia, and if a grower wanted to plant out American vines, that particular vineyard might become a source of infection to others in the vicinity, and that vigneron would know nothing about the existence of the disease, because the first sign would be the dying off of the vines. For that reason he did not think it advisable to have a nursery in South Australia.

Mr. D. G. Quinn, in reply to a question, said that the clean working or otherwise of the vineyard made very little difference in the rapidity of the spread of the disease. Strong vines, he said, would stand the disease for a much longer period before they began to go back than would weak vines. European vines would last for a longer period in sandy soils than would those situated in clayey or stiff soils, but they would eventually die out.

DEHYDRATION.

Mr. H. R. Little, Renmark Branch, read the following paper:—

Dehydration appears to many as a theoretical term, surrounded with mystery, but in reality it is an old art clothed in a new name. The secret is the art of removing water from a product, reducing it to such a condition that bacteria will not thrive therein. Therefore, dehydration is simply "dry sterilisation."

We rarely hear of dehydrated raisins, or dehydration applied to other fruits or vegetables. In fact, one wonders if raisins can be successfully dehydrated, and if there is a real place for dehydrators, or driers, in the dried fruit industry. Although there is a considerable lack of interest in dehydration, due to the unknown advantages of the process, there seems to be a very distinct place for the drier; a specialised and valuable field, which undoubtedly should be recognised by fruit-growers generally. To recognise this field, one has only to pass through one of those unwelcome wet seasons—such as was experienced this year, and they all too frequently occur—seasons when rain after rain prevents the proper drying of fruits, which eventually fosters the growth of fungi, and very quickly renders the partially cured fruit unfit for human consumption. This, then, is the big field for dehydrators in the dried fruit industry. And it would not be presumptuous to say that every grower should provide for sufficient dehydrator capacity to take care of the whole of his crop in such emergencies. If this could be accomplished, it is safe to predict that Australian fruits would find a more ready market.

CAN DEHYDRATION REDUCE COST OF PRODUCTION?

To reduce cost of production should, in the future, be the aim of every drier of fruits, and to shorten the time of curing on the drying ground will tend more than anything else to this end. Up to the present time, to try to do this by dehydration has been unthinkable, owing to the high cost of plants and running of same. A low priced plant that would cost very little to run and deal with the fruit in a practical way, either in small or large quantities, so far has not been on the market, and growers, in a season such as was experienced this year, erect emergency driers. Many of these are very crude; charcoal or wood fires are lighted in "drums," and placed with the fruit inside, without any regard to circulation of air, or other equally important factors. Some people appear to believe that it is smoke rather than heat that accomplishes the desired results. This proves a costly venture in most cases. The result is tons of beautiful fruit smoked and baked till it resembles pebble stones. Many of these crude structures caught fire, causing the growers concerned much loss in fruit, plant and buildings. The fruit so treated—or mistreated—must be sold to help defray the expenses of growing and harvesting. Consequently the prestige of Australian fruit is lowered, and probably the market will suffer. In fairness to the industry, every grower should provide a drier to ensure that damaged fruit will not be marketed. It would mean the saving of hundreds of pounds, which would more than pay the interest on such an investment. In other words, it is a rain damage insurance policy, and what is needed now, more than anything, is more insurance policies, to take the worry out of the business.

RACK DRYING NOT A PERFECT METHOD.

Racks have over and over again proved quite unsuitable for drying fruit in seasons when the weather has been damp and cool, with a notable absence of hot winds; and also at the latter end of drying seasons, when the days shorten and the nights become dewy. During these conditons the grower finds he has inadequate rack space, and commences to remove the half dried fruit from the racks, which results in damaged fruit that soon becomes candied after packing; and should the weather continue damp and unsettled such fruit, in bulk, presents a serious difficulty. Supposing then, that growers had the fruit on wire-netting trays, instead of racks, and possessed a suitable dehydrator for finishing off; then a dehydrator would become a fruit-grower's treasure box. Think of the saving of time! It means the obviating of sheet-drying, a process which incurs considerable worry and expense, and is the main cause of sanded fruit. If this method were adopted, the grower would have a continuous flow of dried fruit towards the packing shed, and the harvest, once started, would continue to the finish without a break.

IS DEHYDRATION CHEAPER THAN SUN DRYING?

This question cannot, at the present time, be answered by a simple yes or no. In California the cost exceeds that of sun drying; but, in spite of this, dehydration is making steady progress, and growers.

find they are actually in pocket, if the reduced area of the drying ground is taken into consideration, and also the absence of delays owing to bad weather. There appears to be some difficulty in classing the product for marketing, owing to its different appearance from the sun-dried article. It is my opinion that we should continue to produce the article that has been so highly spoken of the world over by merchants and others in the dried fruit trade, and we can continue to do this by combining sun drying with dehydration. I can confidently say that dehydration, in conjunction with the sun, will reduce costs of drying by 50 per cent.

By using a plant such as was devised and erected on my drying ground this year, fruit can be finished off more cheaply than spreading on sheets. It takes 40 6ft. sheets to carry a ton of dry fruit. These, on an average, would need to be spread, shaken in, and covered up three times, at a labor cost of 33s. With this dehydrator that I tried out the ton could be finished off for less than half of this. Including fuel and labor, the cost would not exceed 15s. Such a dehydrator would pay handsomely, for it would do the work more quickly and more cheaply than sun drying. This drier proved a complete success in finishing off my fruit, which consisted of wet Lexias, much of it having scarcely dried at all since leaving the dip. We soon had all the racks cleared, and were receiving the congratulations of the packing shed authorities for delivering such a completely dried article so late in the season. It was at the end of May, and on June 19th I received my last cartnote. The A.D.F.A. inspector informed me that the fruit was very evenly dried, and he was most anxious to see the plant producing such a sample. This satisfactory perfection was not quickly or easily reached. It has taken three years of study and discussion, and much experimenting. The difficulty was to make the idea fit the practical needs of the river settlements. For instance, it would be useless to perfect a drying machine if the cost of operating it were too high. There must be no re-spreading of the fruit on to special trays; double handling will not pay. This and other difficulties equally important have been completely overcome.

When success was finally attained the inventors saw the necessity for at once taking steps to protect it by patent, to prevent the exploitation of growers. A complete patent for the whole system has now been issued. For the benefit of the industry the patentees—my sons—intend to make the plants available to growers at the lowest possible price.

A DESCRIPTION OF THE DEHYDRATOR.

The drying is done by an induced draught of heated air. There is no fan or machinery. This cuts down the cost of running to a minimum. The whole thing is based on a stove or furnace, or perhaps a more appropriate name would be a hot air engine, as its peculiar construction causes a flow of air into the drying chamber, under pressure, at any desired temperature. This air machine is placed outside the drying chamber, with its top slightly below the ground level, the air rising upwards and branching into two flues. These convey it at ground level, one on each side, to the extreme

end of the drying chamber. This is the door end, and as the air rises, it is sucked back through the trays of fruit to the store end. This end of the chamber is conical in shape, and in the centre of the cone is the exhaust, or outlet pipe, which extends upwards to a height of about 20ft., directly over the stove. The chimney from the fire leads into this exhaust pipe. Thus it will be seen that the strong upward draught from the furnace induces the flow of air from the chamber. This, with the air pressure push from the stove, creates a hot wind through the room. Hence there is no necessity for a fan. The difficulty of obtaining an even flow back through the chamber is overcome by the conical outlet, where baffle plates are used; thus an equal suction from all quarters, top, bottom, and sides, is assured.

OPERATING COSTS.

Operating costs are extremely low. No more than 3cwt. of wood is consumed in finishing off a ton of half dried fruit, the only other cost being the time spent replenishing the fire occasionally.

The dehydrator will be made in units of 1-ton dry capacity, or 3½ tons of green fruit, so that one or more units, up to any number, can be incorporated in the one plant. It is capable, therefore, of dealing with the large tonnage of the largest growers, just as easily as that of the smallest.

In conclusion, I wish to stress the point that racks will not work so well as wire trays, in conjunction with dehydration. You cannot put racks in a dehydrator. When fine, dry weather suddenly changes to wet and damp conditions, there is only one thing to do if the fruit is on racks; simply wait until it becomes fine again. On the other hand, with fruit on wire trays, it could be quickly finished off, and the trays made available for re-filling. Therefore, to economically dehydrate, use wire trays. This advice will not be welcome to growers who possess a lot of racks, but I am convinced it will pay them well to gradually convert them to trays and get a dehydrator.

Mr. H. S. Taylor (Renmark) said that lexias when properly dried and finished off in the dehydrator, as described, would keep very much better than the article dried in the ordinary way, and there was also the assurance that the article would reach the shed quite free from grubs and insects.

Mr. G. Brown (Williamstown) said that dehydration was yet in its infancy. There were many different kinds of dehydrators, and they had yet to see the perfect one; nevertheless, he thought they had come to stay. Growers did not care to handle their fruit too much and with a dehydrator it could be handled more quickly. Wire trays were not always advisable; unless a sheet of hessian was placed over the wire it would mark and spoil the fruit, and the sulphur would also destroy the trays in a very short while.

Mr. H. R. Little, in reply to a question, said that the time taken to dry the fruit with the machine varied with the condition of the fruit. It would take about 12 hours to "finish off," or about 24 hours to dry wet fruit. He had found that the most suitable temperature was between 130° and 135°F.

CURRENTS AND QUALITY ESSENTIAL FOR MARKETING, AND NECESSARY CULTIVATION REQUIRED.

Mr. F. B. Wilson, McLaren Flat, read the following paper:—

It is not my intention to elaborate on introductory remarks. I will endeavor to express my idea and methods as they present themselves to me. I do not ask you to accept them, but I do think there is a wide range for consideration. Currants are a product in which we are all interested. They form part of an industry of which we are all proud, and rightly so. It is, therefore, imperative that we should produce the very best article, which is so essential if we are to compete successfully against the older countries of the world, where labor and living conditions are so much lower than they are in Australia.

It is very necessary to produce a sample of rich, dark color, carrying all the bloom that is possible to retain in the drying process, and to be even in size. Now, it is impossible to get a sample showing an attractive bloom, off trays or out of a drying shed, that has been filled with inferior or immature fruit, such as is usually gathered from badly, and at times, uncultivated vineyards. I do not say that it is always the cultivation that is accountable for poor and faulty fruit. There are times, and I am sorry to say they frequently occur, when bad pruning performed by unskilled and inexperienced men, is to blame. This point of management on the part of the owner cannot be too carefully observed. There is nothing that gives more trouble than a rough and dirty pruner. Summer pruning proves very beneficial both to the vines in question and the quality of the fruit at vintage time.

Then it is necessary to manure the vines in order to get the best results, and these results are only obtained by using the fertilizers that are best suited for the production of the article that we are after, viz., the best. Different soils require different fertilizers. My experience in heavy land leads me to believe that in this class of soil we require something to keep the heavy clay soil loose, and I recommend a dressing of gypsum of 1 ton to the acre. I have found this is very beneficial. It makes the land easy to work, and retains the moisture during the summer, which is so essential for the developing and maturing of the crop. This in itself is not sufficient; we must then look for the best fertilizer to apply for fruit producing purposes. In this we have a wide range from which to select. My experience has been that 4cwt. of bonedust to the acre every four years, and 4cwt. vine manure annually, with a dressing of gypsum every third year, have given really good results, and I have been able to produce samples that are very satisfactory from this method of fertilizing. However, to determine which is the best fertilizer to use is a question for the vigneron to decide. Different classes of land require different treatment. I am sure that the class of land referred to requires something to cause it to relax, and it may possibly be a great benefit to dress with 1 ton per acre of gypsum in alternate years as well as the 4cwt. vine manure annually.

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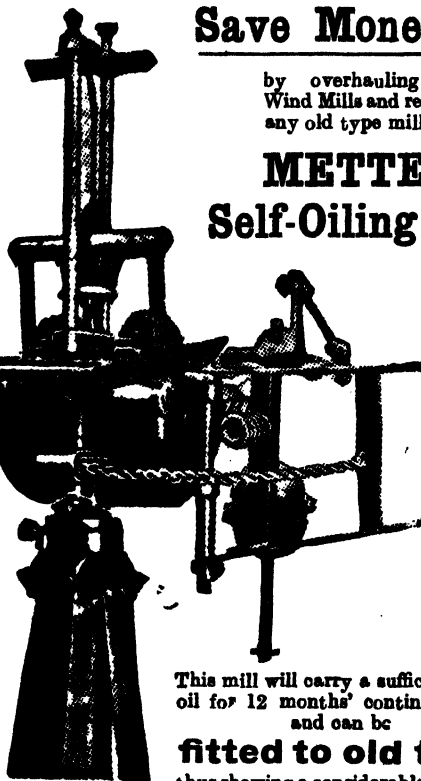
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The question of cost will naturally arise, and I will admit that this appears at first glance to be high. Gypsum at £3 per ton would cost 30s. per acre annually, and vine manure at £8 per ton 32s. per acre, plus carriage; 4cwt. bone dust every four years works out at 8s. per acre annually, making a total of £3 10s. per acre, plus carriage. This works out, approximately, at 10s. per ton, and adds to the above cost per acre accordingly. This, I admit, appears high at first sight, but when you compare it with the returns of a vineyard that has not been properly treated, you will agree with me that it pays to fertilize. The difference is, on the one hand, you have a return of about half a ton, and perhaps less, to the acre of poor quality fruit, altogether unfit for export, a disgrace to the district in which it is grown, and bearing no recommendation for the grower. On the other hand, you have a return of 1 ton, and often 1½ tons, to the acre of beautiful, fully matured fruit that is carrying that rich glossy bloom that is required to compete in the world's markets, and make the industry a success, both to the grower and the State.

Viewing the facts in this light, you will easily see that it is a very profitable undertaking to manure judiciously. The cost per acre is set out at £3 10s. for manure, plus carriage 10s. The half-ton of fruit per acre from land not manured, valued at 4d. per lb., approximately, off the trays through the buck sieve equals £18 13s. 4d., as against 1 ton off trays at 4d., approximately, which equals £37 6s. 8d., showing a difference of £18 13s. 4d. per acre, less cost of manure £4, which represents a profit of £14 13s. 4d. per acre. These figures are based on conservative lines, and do not allow for the possibility of inferior fruit from the unmanured vines. The time has arrived when it is absolutely imperative to produce an article that will stand the tests that are being made (and rightly so) by the Government of the day. In the past inferior products have been exported, which soon undermines an industry, and to-day it is necessary to export an article that will redeem and uphold Australia's good name.

The best results are received when dressings have been administered after the first ploughing. The heavy winter rains having then passed, the danger of losing the manure by washing is less. Weather conditions are certainly a very great factor in successful cultivation, and if favorable, make the work very much easier. After the first ploughing, the cultivator should be put through to keep the soil loose, and prevent it from setting hard. In a wet season I have found it necessary to cultivate twice, and on some parts three times, between the first and second ploughing to keep the land in a fit condition. After the second ploughing it is very necessary to work the soil to a fine surface, to conserve all the moisture possible. After every summer rain the cultivator should be at work; in fact, there is always a job that will pay the grower, viz., keep the cultivator continuously working. On a 40-acre holding this implement should never be idle during November and December. The grower that follows his cultivation on these lines I am sure will be amply repaid, and at vintage will have, under normal conditions, a sample of fruit of which he will be justly proud. On the other hand, the grower that does not attend

to his cultivation must be prepared to accept at least a one crown drop on his fruit, which means at least $\frac{1}{4}$ d. per lb. This in itself represents a very substantial loss.

On many occasions after the first ploughing the soil is allowed to lie and harden without even the harrows to crumble the surface. This, in my opinion, is very disastrous to the cultivation of a vineyard. It is most essential to retain moisture, and if the land is left in its rough state after the first ploughing and the season happens to come in dry, the so much-coveted moisture soon disappears and leaves the soil rough and hard. To overcome this trouble the cultivator comes into use after the harrows have crumbled the surface. If this practice is followed you will find when the second ploughing is started the soil will turn up in a soft and loamy condition, which is very necessary if the moisture is to be retained. If the cultivator is kept working, as suggested previously in my paper, the cultivation will be complete, and the vines will then yield to the grower a sample of fruit that he will be justly proud of, and also a credit to the district in which it is grown.

We then have the "bogey" of distribution and marketing problems to contend with. In a country like Australia, with the glorious conditions, it does not seem fair to me that the people that help to produce the article should have to pay more than the price paid by people on the other side of the world. If our organisations can and do sell overseas at a price within the limits of the consumer's capacity to pay, then why should not the people of Australia be able to purchase their own grown products at the same price. This, I contend, has been one of the principal reasons that our consumption of fruit per head of the population of Australia has been so much lower than that of the Americans. Further, it should be the aim of the grower to supply the best quality fruit for home markets, as well as for export. It is a mistake to dump inferior fruit on to the local market for home consumption. The fruit should be of excellent quality, and at the world's parity price, so that Australians could be encouraged to eat more fruit and help the fruit industry.

Mr. H. S. Taylor (Renmark) said Australian dried fruit was selling well in England to-day. Eighty-five per cent. of the dried fruit selling in the Old Country was Australian fruit. Dried fruit prices did not at present cover the cost of production, and nothing but Government help could place the industry on a proper footing. The trouble was not only in the selling of the fruit, but that world parity prices were not sufficient to cover the cost of production.

THE CLYDESDALE.

Mr. D. A. Lyall, of Auburn, delivered an address dealing with the Clydesdale horse. His remarks were illustrated by lantern slides. Mr. Lyall said:—

"During last summer Mr. McNeilage, Secretary of the Clydesdale Society, visited Canada, and while there delivered some lectures on the Clydesdale horse, illustrated with lantern slides. Thinking these might be interesting to the Clydesdale people here in particular, and the draught horse men generally, we got Mr. McNeilage to send out

some of these plates and he has sent us the photos of 22 stallions and eight mares, which may be taken as representative of the breed. Beginning with Merryton Prince of Wales 673, and ending with Wells Mescal, a mare imported into Victoria last year, these photos deal with a period of between 50 and 60 years, and will be shown in their respective order of date as near as possible. During this period you will notice that, under the judgment of breeders or the fashion of the day, this breed of draught horse has undergone some minor changes in conformation and type, but the dominating object has all the time been to produce a horse fit for heavy haulage and yet active enough to get through a big day's work on the land.

HISTORY.

As this is one of the greatest families of our rural livestock, it may interest you to take a brief view of the early history of the breed, though the time at our disposal to-night will not allow us to go into it very fully.

All available records seem to agree that the earliest attempt to improve the draught horse in Scotland began amongst the tenant farmers in the Upper Ward of Lanarkshire, in the Valley of the Clyde; hence the name of the breed. Here in the seventeenth century the farmers apparently set to work systematically to improve their horses by selection and careful mating, mostly among the local stock. The first infusion of outside blood so far as we know was the importation of four Flemish stallions brought over by the then Duke of Hamilton to help on the work among his tenantry. These horses seem to have mated well with the local mares of nearly two hundred years ago, and it is on record that another Flemish horse was later on brought from England, which also mated well. From about 1784 Scottish breeders seem to have depended solely on themselves and the stock they had in different parts of the country by this time to give them all the out cross blood they needed.

Among the early outstanding breeders possibly no man did more good work than did Laurence Drew, of Merryton. He was one of the prominent breeders of his time, and is said to have bought several mares from England to mate with his horses. His brother Robert made money at Australian gold mining, and when he returned to Scotland in 1870 he bought 'Prince of Wales' from David Riddle, of Blackhall, and presented him to his brother Laurence. What a splendid present it must have been for a born breeder! Besides being one of the great breeders of his day, Drew was a regular exhibitor at all of the leading shows, his stock frequently appearing under the description of 'breeder unknown.' This at times led to lively discussion and newspaper correspondence, and with other events, led to the incorporation of the Clydesdale Society in 1877 and the publication of the first Stud Book in 1878. Drew was not a supporter of registration, and was opposed to in-breeding.

IMPORTATIONS.

Importations to this country and New Zealand began in the very early days of the breed, and included some of the best horses of the time, among them 'Conqueror,' the sire of 'Darnley,' so that we have to thank our predecessors for giving us a start with excellent stock. Unfortunately, we have had very few importations to South Australia direct from Scotland for the past 40 years, and possibly none of our local studs of the past has left a stronger impression than that of the late Mr. J. H. Angas. Although that stud has now been broken up for many years, some of the breeders of to-day are very pleased to own a mare with plenty of the Angas blood. During the past few years fresh interest in our draught horses has been evident and several very good stallions and mares have been brought here from the Eastern States and New Zealand, which will do good; and now that we have got a Stud Book established for the Commonwealth greater encouragement will be given to the importation and breeding of better horses. Those of us who have to do with entries for the Stud Book are very pleased to know how our pure mares have increased and we have now reached the stage when we would be warranted in importing a really first-class horse.

PRESENT-DAY HORSE.

Before we look at our slides, I may say that we do not claim perfection for the Clydesdale, but we do say that he is the nearest to the ideal draught horse of anything we know. You will be shown horses with plenty of weight and activity and clean, hard bones to stand wear and tear. We also claim that, as shown by the British Horsebreeding Act of 1918, up to October of last year that it is probably the soundest draught horse in existence.

QUALITY.

We know that some of the Old Country breeders have overdone the breeding for quality and show points, but any breeder of stock is subject to vagaries of this kind, and we know that the horse fit to get and is getting first-class big geldings can be got by those who want him and are willing to pay his price.

IMPROVING LOCAL HORSES.

I hope the day is not far distant when we shall see the bulk of the stallions travelling the country consisting of pure-bred, sound horses, and travelling at a fee that will drive the mongrel horse off the road. Unfortunately, there are many owners of mares who would rather use a poor class of horse at a fee of about £1 10s. than they would pay £5 for a good horse, though the stock from the latter would far more than pay the difference. I am not a believer in running to the Government for help as soon as we are in trouble, but there are some phases of public utility that can only be controlled by the Government, and one of these is, I think, their sympathetic encouragement of efforts to improve the livestock in our agricultural areas. These efforts assume different aspects, according to class of stock to be dealt with.

and in our draught stock I place constitution and soundness first, and if we can secure pure-bred horses with these two qualities we will have done much to improve our horses and add to their value. But our disadvantage on breeds at present is that we have no Act to prohibit the dumping in here of rejected animals.

Whatever portion of our haulage or agricultural work may in the future be done by mechanical power, I am convinced that there is still a great future ahead of the draught horse, who must continue to play a big part in our economic rural life, and be a source of pride and pleasure to those who use him."

Wednesday Morning.

FEEDING FOR PRODUCTION.

Mr. R. Baker, Dip. R.A.C., Dairy Instructor, Agricultural College, Roseworthy, read the following paper:—

On an examination of the statistician's figures for the year 1922-23 it will be discovered that there is an increased number of dairy cattle in the State, and that the value of dairy products shows an increase of £140,287 on the corresponding total for the previous season. The figures are certainly encouraging from the point of view of the dairying interests. On going deeper into the question, however, we find that the increase does not apply to the individual, for the average cow is not yielding as much milk to-day as in 1918-19.

Since there is a greater number of dairy cattle, it follows that there must be an increased number of cows that are not paying their way. In the following table, extracted from the Statistical Register for the year 1922-23, the position regarding dairy production is clearly shown. Complete figures not being available in every case, the total production of milk has to be estimated. Nevertheless the figures serve to indicate that the average production per cow is far too low in our State.

Year.	Number of dairy cows, including all over 2 years.	Estimated quantity of milk produced. galls.	Estimated average quantity of milk per cow. lbs.	Estimated quantity of butter fat per cow. lbs.	Estimated value of dairying production. £.
1918-19 . .	103,230	32,242,763	3123.3	124.93	1,546,650
1919-20 . .	106,982	30,899,533	2888.2	115.52	1,706,624
1920-21 . .	117,536	34,656,709	2948.6	117.94	2,333,102
1921-22 . .	131,054	41,397,905	3151.2	126.04	1,839,178
1922-23 . .	135,450	42,054,213	3104.7	124.18	1,979,465
Average for five years .	118,851	36,259,229	3053.4	122.13	1,881,004

The raising of the standard of production per cow is entirely in the hands of the cowkeeper. By breeding a better class of cattle, using approved sires, culling all inferior cattle, keeping records of production, and by adopting more advanced methods of feeding, a vast improvement would speedily be effected. From the point of view of dairying, indeed it is only in limited districts that green

fodder can be grown in large quantities throughout the year. Still in less favored localities, with the manufacture of ensilage and a knowledge of the rudiments of nutrition, it is possible to bring about a marked increase in the average production of the cow.

FEEDING FOR MILK PRODUCTION.

In the economical production of milk there are two main factors which should be taken into consideration. One is the adaptability of the cow used for the purpose, depending on individual and breed characteristics. The other, the amount and kind of food consumed. These two factors are intimately connected, and only with their combination is it possible to produce milk in large quantities economically. No matter how good a cow may be she will not give an average production unless well fed, whilst on the other hand, however, abundant feeding will not push production beyond a certain point in the individual, because a cow has a natural limit to its production. To feed beyond this limit will involve waste as far as the milk yield is concerned, the excess of food being used merely to fatten the animal.

It is the high producing cow that utilises the maximum amount of food for milk production, and this class will always produce at a less cost per lb. of fat than will the low producer; she is therefore a much more economical animal.

The quantity of milk depends, as has already been stated, on breed and individual characteristics, so, from an economical point of view it is of the greatest importance to start with good cows, rather than inferior or medium ones. One good cow will in all probability cost a little more than two inferior ones, but her production will be as great or even greater than the total of the two. She will not consume as much food, and labor costs will be lower.

The most profitable cow is the one that returns the largest amount of butter fat per unit of food consumed.

BODY REQUIREMENTS FROM FOOD.

It is necessary when discussing the feeding of cows first of all to understand to some slight extent the body requirement for food. Food is fed to cows for two main reasons, "maintenance" and "production."

Maintenance.—This includes the maintenance of life, production of body heat, and the performance of work. The amount of food needed to carry out these functions without any increase or decrease in the weight of the animal is known as the ration of maintenance.

The normal temperature of the cow is approximately 100° F., and during cold weather air temperature falls far below this, with a result that the body is constantly losing heat. To maintain this temperature the cow has to consume large quantities of food. In order to economise food for this purpose, milking stock should, during extremely cold weather, be protected in some way, usually by means of rugging, the use of shelter sheds, or the protection from rough weather by means of belts of trees. If some sort of protection is not available it will be found that the cow will utilise quite a high per-

centage of its daily ration for the mere maintenance of body temperature, reducing the quantity that would have been available for production under more favorable conditions.

Work and Energy.—Then again before food can be used by the cow for production, the constant wear and tear that is going on in the body in the performance of work and production of energy must be provided for. Respiration, circulation of blood, the mastication and digestion of food, and the expelling of undigested food from the body, are a continual drain on the energy stored in the system, and the losses thus sustained have to be made good by the food the cow consumes.

PRODUCTION.

After the animal has utilised the food consumed for these different functions, that which remains is available for production. This is, for the supply of material for milk, the development of the unborn calf, and the growth of the immature parent.

COMPOSITION OF FOODS AND THEIR FUNCTIONS.

To carry on the different functions of the body, cows must have certain constituents in their food that will enable them to perform the work required. These constituents, which are known as food nutrients, are as follows:—

Water	Fat
Protein	Crude fibre
Carbohydrates	Ash or mineral matter

To understand the value of these different components it is necessary to consider them separately.

Water.—This is a constituent of all foods. Even those that are apparently dry, such as bran and crushed oats, contain from 10 per cent. to 15 per cent., and in succulent fodders, such as green lucerne, green maize, &c., the water content rises to 80 per cent. The water in foods serves the same purpose as that consumed by the cow in the ordinary way. It is indispensable in the animal body, as it is an essential constituent of living matter. It regulates body temperature, aids digestion, and is present in milk to the extent of about 87 per cent.

Protein.—This constituent of food, which contains nitrogen, determines to a great extent the value of a fodder, and, generally speaking, it is the most important constituent present. It is the only component that has the power of forming lean flesh in the animal body, and is, therefore, frequently referred to as the "flesh former." It also builds up body tissue, in fact, all those parts of the body that contain nitrogen. In milk, it is present in the form of casein or curd, so valuable as food in the form of cheese.

Young animals require a more liberal allowance of protein than older ones, as they have to support the continual growth of the body. When the supply of protein in food is insufficient to meet the requirement for the production of milk, the deficiency is made up from the flesh of the animal, and this is one of the reasons why we often hear of a cow being "milked thin of flesh." Protein has the additional power of being able to supply heat and energy, and bring about the

production of fat; but to use this valuable portion of the food to do this work when it can be performed by the cheaper carbohydrates is not economic feeding. Of the different hays, lucerne and clover contain the largest amounts of protein, while concentrated foods, such as bran, linseed meal, crushed oats, &c., contain a relatively large quantity.

Carbohydrates.—These are known as “nitrogen-free extracts” or “fat formers.” Their work in the animal body is to supply heat and energy and promote fat production. They are present in foods in the form of starch and sugar. They are more easily obtained than the protein, as most fodders and concentrated foods contain a fairly high percentage. As already stated, when carbohydrates are insufficient in a food ration their work can be carried out by the more valuable protein. The carbohydrates in foods are also utilised by the cow for the manufacture of milk fat. In winter time, an increase of carbohydrates in a food ration is beneficial, as it counteracts the cooling influence of the atmosphere.

Fats or “Ether Extracts.”—All foods contain a small percentage of fat which performs, practically speaking, the same duties as the carbohydrates; in fact, they are carbohydrates of a higher value. They are, on an average, two and a quarter times as valuable as the carbohydrates for the production of heat and energy.

Crude Fibre.—Sometimes termed “woody fibre,” and generally present in large quantities in what are termed “bulky fodders,” such as hays and green fodder. In concentrated foods (bran and oats, &c.) it is found only in small amounts. When plants are young they contain large amounts of fibre, a great proportion of which is digestible, but as the plant becomes ripe the stems and leaves assume a woody character, the greater proportion of which is indigestible. This is the reason why fodders that are conserved in the form of hay should be cut before all the nutritious properties have left the leaves and stems to form grain. A food, in order to satisfy the requirements of a dairy cow, must have a certain amount of bulk, hence the value of crude fibre in a ration. On the other hand a food should not be too bulky, as in times of scarcity animals will have to consume large quantities of bulky matter in order to extract sufficient nutriment to maintain life. Very frequently the consumption of an excessive amount of roughage leads to digestive troubles and a temporary interruption in the milk flow.

Ash or Mineral Matter.—Lime, magnesia, and phosphoric acid are the important constituents of bone, and it is generally found that foods fed to cows contain a sufficient quantity of these substances to build up the skeleton. Potash is found chiefly in muscular tissue, while soda is an important constituent of blood and digestive juices. Common salt aids digestion, acts as an appetiser, and should always be within the reach of a dairy herd.

On examining the composition of a cow's body we find—apart from the contents of a stomach, &c.—that it contains about 16½ per cent.

of protein, 19 per cent. of fat, and about $4\frac{1}{2}$ per cent. of mineral matter. Also a cow yielding 800galls. of milk per year will give in that time the following quantities of nutritious matter:—

Composition of milk.		Total quantities present in 800galls. of average milk.
	per cent.	lbs.
Water	87.20	6,976
Fat	3.90	312
Casein (proteins)	3.00	240
Albumin (proteins) . . . . .	.45	36
Milk sugar (carbohydrates)	4.70	376
Ash or mineral matter . . . . .	.75	60 ⁺
Total		8,000
		[A gallon of milk is taken as weighing 10lbs.]

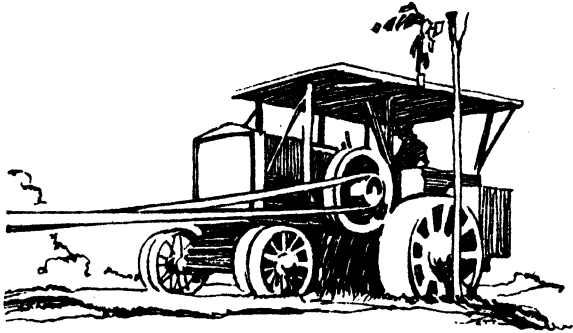
Thus we see, for a cow to maintain her body and to produce in her milk these quantities of highly nutritious matter, she must be given an adequate ration, containing a sufficiency of the essential nutrients. This leads us to the question of what quantities are required to maintain the animal in good bodily health as well as produce large quantities of milk, in other words, to form what is termed a "well-balanced ration."

A BALANCED RATION.

A ration is the quantity of food that is given to a cow per day, and a well-balanced ration is one that supplies the different nutrients referred to as protein and carbohydrates in sufficient quantities without containing an over-amount. From a large number of experiments that have been carried out on scientific feeding it has been ascertained that a cow of 1,000lbs. live weight, yielding 3galls. of milk a day, requires in her daily food 24lbs. to 26lbs. of dry matter which contains in an easily digested form:—

2 $\frac{1}{2}$ lbs. to 2 $\frac{3}{4}$ lbs. of protein,
11 $\frac{1}{2}$ lbs. to 13 $\frac{1}{2}$ lbs. of carbohydrate,
 $\frac{1}{2}$ lb. to $\frac{3}{4}$ lb. of fat.

On examining the analyses of different green fodders we find that in every 100lbs. there are about 20lbs. of dry matter, only a portion of which is destined to be digested by the cow. It will be noticed that the protein is present only in small quantity, although the percentage differs to a very marked extent in different fodders. In the building up of rations it will be found somewhat difficult to regulate the amount of protein without waste, but in order to secure a properly balanced ration the adjustment is essential, as the correct proportion of flesh formers to fat producers should be adhered to as closely as possible. A well-balanced ration for a dairy cow should have the protein and carbohydrates in the proportion of 1 to 6, although small deviations from this will not matter to any great extent, provided the cow gets a sufficient quantity of food. If the



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proportion is 1 to 3 or 4, or 1 to 7 or 8, it will represent rations that are badly balanced. In the first case, which is termed "a narrow ration" the fodder is over-rich in protein and too low in carbohydrates, and is not, therefore, economical. A food having the proportion of 1 to 7 or 8 is termed a "wide ration," which implies that it is deficient in protein.

In estimating the value of a fodder or a ration, it is necessary to understand that only a certain percentage of the dry matter is capable of being digested, and it is this digestible portion that makes a food valuable, also that the composition of foods and their digestibility do not remain constant. This depends to a very great extent upon the condition of the crop when harvested. There are other conditions which affect the composition of fodders, climatic conditions during growth, cultivation and type of soil, &c., all having an influence on the growth of a crop. The following table gives the approximate digestibility of dry matter in different fodders.

	Per cent.
Green maize	about 70
Sorghum	" 57
Green oats	" 72
Green barley	" 72
Green lucerne	" 70
Lucerne hay	" 62
Oaten hay	" 55
Bran	" 73
Crushed oats	" 70
Ground maize	" 90

FEEDING FOR MILK PRODUCTION.

Every dairy farmer, in fact, every farmer that realises the necessity for hand-feeding cows during that portion of the year when the natural pastures fail to supply sufficient suitable fodder, welcomes the time when the animals can be turned out on to pasture that will supply the full requirements for the production of large quantities of milk. Not only is the labor and expense of hand feeding done away with, but each cow may be expected to give her best results when on grass. The difficulty in many parts of South Australia is the inability of the pasture to supply fodder in such a condition that it eliminates hand feeding altogether, and even when possible it is only for very short periods. During dry periods, which are a constant trouble to the cowkeeper, natural pastures supply little or no feed, and it is during these periods that the dairyman must supply fodder that has been conserved during times of plenty. We should not overlook the necessity for always bearing in mind that during good seasons we should prepare for lean seasons. Even though there is a succession of good seasons, one should never lose sight of the fact that there is always the possibility of the next being one that will require the greatest care and management in providing a suitable fodder that will carry them through this period of scarcity economically.

FEEDING GRAIN WHILE ON PASTURE.

From an economical point of view there is some difference of opinion on the feeding of grain to cows on pasture. When pasture is young the immature grass, such as we find in the early spring of a good year, contains a very large amount of water, and a small quantity of dry matter, and it is an impossibility for a heavy-milking cow to consume sufficient to supply the amount of nutrients necessary for a large milk flow. It is, therefore, necessary that she should be fed something in addition which will make up the deficiency in the pasture. This deficiency is generally supplied in the form of grain or other concentrated foods. When the pastures are in good condition there is practically no response by cows of medium producing capacity to grain fed in conjunction, but, on the other hand, with a heavy-producing cow the case is different. In this instance, it is necessary to feed grain, unless one is prepared to suffer a reduction in yield. Although it may not be economical to feed grain while cows are on pasture, it will generally be found that those that have received a ration of grain will give better results when the grazing period is over than those that receive no grain. The grain-fed cows are able to store up surplus nutrient material in their bodies which is afterwards available for milk production. Small cows of the Jersey type, giving 2 gallons of milk a day, and a larger cow such as the Shorthorn or Friesian, giving 2½ gallons of milk a day or more, should be given some grain while at pasture. The following amounts may be found to meet the requirements of the animal:—

Jersey type producing—

20lbs. of milk a day	3lbs. of grain
25 " 	4 "
30 " 	5½ "
35 " 	7 "
40 " 	8 "

Shorthorn and Friesian type producing—

25lbs. of milk a day	3lbs. of grain
30 " 	4 "
35 " 	5½ "
40 " 	7 "
50 " 	9 "

These different quantities only apply when cows are on abundant pasture. The grain used should be a mixture of bran and crushed oats, but when larger quantities are being fed a small quantity of linseed meal may be added to the mixture. When pastures are very succulent, grain, in the form of crushed barley, may be added to the mixture; it helps to correct the laxative character of the pasture. Pollard may be also used for this purpose.

Naturally, this is the time of the year when cows are producing their highest yields, so that in order to keep up the production we

should imitate these conditions as near as possible throughout the remainder of the year. The conditions that bring about the maximum production are as follows:—

1. An abundance of palatable food.
2. A balanced ration.
3. Succulent feed.
4. Protection from heat and cold.

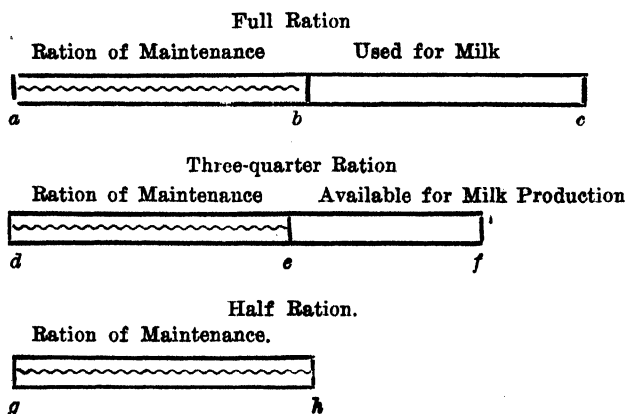
PROVIDING FODDER WHEN PASTURES ARE INSUFFICIENT.

A mistake often made is the failure to supply food when the pastures begin to go off. This is probably the most critical period of the year for the dairy cow. The tendency is as long as the cows are keeping up their milk supply to believe that they are getting sufficient out of the pastures. This is a mistake, for a cow with high milk-producing characteristics will go on producing milk even to the extent of extracting nutrient material from her own body. These cows gradually fall off in condition, then the milk yield begins to suffer. It is almost an impossibility to restore the flow of milk to its original amount after it has once been allowed to drop on account of insufficient feed. Provision should be made to have something on hand that can be fed when needed, for to obtain large returns the milk flow must be kept up 10 or 11 months of the year. Provision can be made for this purpose by having lucerne, maize, or sorghum available, although in most cases these fodders are not sufficiently early to be used as a supplement to pasture; it is necessary, therefore, to resort to fodders that have been conserved for these periods of scarcity. There is no better conserved fodder that can be utilised at this stage than ensilage that has been manufactured under favorable conditions. Later on, under special conditions, where irrigation is practised, lucerne, maize, or sorghum can be utilised to supply succulence to the food rations. In districts where irrigation is not possible, ensilage made from a mixture of barley, oats, and a leguminous crop such as vetches or peas, will supply the succulence necessary in building up a suitable ration.

QUANTITY TO FEED.

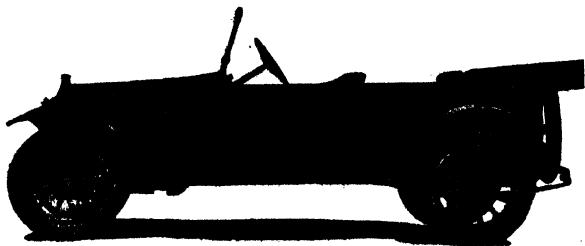
One of the conditions, as already stated, necessary to procure a high milk yield is an abundance of palatable food, and also that the first use of the food consumed is for the maintenance of life. This quantity is practically a fixed amount whether a cow is dry or producing milk. With a medium-producing cow, the quantity needed for maintenance is about 50 to 60 per cent. of the full ration, while with a high-producing cow it may be as low as from 40 to 50 per cent. It should be fairly evident that it would be false economy to go to the expense of providing sufficient food to keep the animal alive, and then neglect to supply the remaining 40 to 60 per cent. which would be utilised exclusively for milk production. This is one of the commonest mistakes made in feeding cows, more so with a high-producing individual than with the medium type. The importance of liberal feeding for economical production can be easily understood by the following illustration from Eccles:—"In the first illustration the

proper feeding of a heavy-producing cow, which is the one usually underfed, the line A to C represents the total capacity of the animal for food or a full ration. The first half A to B represents the amount of food to maintain the animal's body or the ration of maintenance. The second half, that portion from B to C, represents the proportion of food used for the production of milk. In this case there is no fat being produced on the animal's body, and the cow is supposed to be of such dairy quality that all the feed she can eat in excess of that required for maintenance is used for milk production.



The line below represents what would happen if the feed of this animal was reduced by a quarter. The ration of maintenance remains, practically speaking, the same as in the first case, represented by the line D to E. However, the cut of a quarter in the ration will be seen to come entirely on that available for milk production, and reduces this amount by half. If the rations of such a cow are further reduced to half of a full ration, or that required for maintenance alone, as represented by the third line, the cutting down of the ration would remove all available food for milk production. However, a cow under such conditions would not cease to produce milk at once; the milk-producing functions are so strong that she would continue to produce milk for some time, drawing on the reserve material in the body, but when this is exhausted the milk will fall away to a minimum. Something of this sort usually follows when a heavy-yielding cow calves. For the first three or four weeks the cow falls away in condition, for she is not capable of extracting sufficient nutrients from the food to produce large quantities of milk. This is one of the main reasons why a heavy-yielding cow should be in good condition at calving time. Even though the cow is supplied with sufficient food, she could not digest these large amounts, and probably digestive troubles would result.

When the feed is in excess of what is required for production of milk, the cow begins to store reserve material on her body. In the second illustration, Eckles points out the mistake of over-feeding to low-production animals which are liable to be over-fed, especially



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food more palatable, or more digestible, will more than pay for the extra labor involved.

In hand feeding, all foods should be supplied to the cow in a finely divided state, even to the extent of chaffing green fodder, for when in this form, they are more readily eaten and more easily digested. This also applies to all concentrated foods, which should be either bruised, crushed, or ground.

There is a difference of opinion whether food should be damped before feeding. Although it might apply to some animals, it does not apply to the same extent to the cow, which has the faculty of ruminating, *i.e.* re-chewing the food. As already stated, one of the conditions for milk production is the necessity for a juicy fodder, hence, when dry foods are fed they should be damped to increase their succulence. On the other hand, the labor involved by cooking or steaming food is not compensated for by a greater improvement in a hand-fed ration. Cooking or steaming may improve the palatability of an inferior fodder, but will lower the digestibility of a concentrated food, especially those that are rich in the important constituents—protein. The use of molasses will increase the palatability of a coarse, dry fodder. The mixing of a number of foods together increases the digestibility of each.

TIME OF FEEDING.

Cows are animals of habit and quickly settle down to any routine, especially with regard to feeding. They will milk equally well if fed before, during, or after milking.

Where all cows are accommodated in the byres at milking time, a good opportunity for seeing that each animal gets its allotted quantity of food is provided. By this means also the weaker cows are permitted to feed without being molested by the stronger ones. The concentrated portion of the ration can be given half in the morning and half in the evening, mixed with part of the bulk fodder, the remainder of the bulk being fed during intervals between milkings. When cows remain in the bails only while being milked they may be fed before or after milking, care being taken to see that each cow receives its right quantity of food. It is advisable to erect feeding bails instead of allowing them to feed out of common troughs, so as to prevent the weaker ones from being crowded away and ill-treated. Further, under this system, each cow can be fed according to the quantity of milk she is producing.

Foods that are inclined to taint milk and those that are strong smelling should be fed immediately after milking so as to prevent the taint or odour being imparted to the milk.

Silage at times has a strong odour, but when manufactured under good conditions and from good material, will not affect the flavor of milk if ordinary care be taken.

The College herd is fed from ensilage from five months to six months of the year, always at milking time, and only during the first few days when silage feeding commences does it impair the quality of the milk, and then to a very slight extent.

FEEDING.

All cows should be fed according to the quantity of milk they produce. The feeding of the individual may cause a slight increase in labor, but it is compensated for by the increased production of the herd without any increase in the total amount of food that would be used if the herd was fed without regard to the production of the individual cows.

A simple method of feeding that might be carried out is, first, supply the cows with all the bulk that they will clean up at all times; second, give a pound of grain daily for every pound of butter fat produced in a week, or, alternatively, for every 3lbs. of milk per aday.

With regard to feeding 1lb. of grain to 3lbs. of milk, it should be pointed out that with a heavy milking breed, the amount would be a little too high, while with a cow producing rich milk in a moderately large quantity it would be a bit low. The rule based on butter fat per week would apply to any breed.

The amount of grain may also be affected by the character of the roughage. When lucerne or lucerne hay are used, the amount of grain can be reduced. On the other hand, it might be necessary to increase it when chaff or immature green fodder is used.

SOME COMMON FODDERS.

Lucerne may be described as the best fodder crop grown for the purpose of feeding cows. Having the highest proportion of protein of all fodders, it is specially useful in balancing other foods deficient in this element, such as green maize.

When cutting lucerne for feeding green, it is advisable to let it wilt before feeding, as this allows time for the escape of the greater part of the natural odour of the plant, and thus reduces the risk of tainting the milk.

There is a certain amount of risk in grazing lucerne, so where possible it should be cut and hand fed, either as green fodder or hay. This is of particular importance to farmers carrying on dairying on a small irrigated block, as he can ill afford to waste the fodder. Care should be taken when cattle are grazing on lucerne to prevent "blowing." Provided cattle are not allowed free access to lucerne in wet weather when the crop is growing, or they are not hungry when turned on to it, the risk is not very great. When first allowed access to a lucerne field cows that have been fed on dry feed should never be allowed more than half an hour a day, especially if lucerne is in a growing condition. The period should be increased gradually until they become accustomed to it. Where lucerne is grazed the paddock should be divided into small plots, so that it can be fed off quickly in order to allow the new growth to develop without check.

Green Maize.—On irrigated areas where maize can be grown to advantage, it makes an excellent food for stimulating the milk supply, owing largely to its sweet succulent nature. Nevertheless it must

be remembered that it is a poor balanced fodder, being deficient in protein. When fed for any length of time without the addition of a food that would make up the deficiency, the condition of the cow and the quality of the milk suffer. By feeding with lucerne hay and a small quantity of bran or crushed oats it would provide a ration which would not only keep a cow in good condition, but would stimulate her to produce a high milk flow.

Sorghum and Sudan Grass.—Like maize, these provide stimulating fodder for use during late summer and autumn, when natural pastures are not available. They are even more deficient in protein than maize, but owing to their palatability and their high sugar content are greatly liked by cattle.

Sorghum, Sudan grass, and maize are particularly suited for the manufacture of ensilage. When grown under irrigation they yield large quantities of fodder, but in our drier areas have generally proved unreliable. It is possible, however, that an acclimatised strain of Sudan grass adapted to such districts may be evolved in the near future.

Green Cereals.—These are useful as an early feed, and a small catch crop should be put in as early as climatic conditions will permit. It will come into use when the pastures are either scarce or immature. When mixed with vetches, an excellent fodder is provided. Green barley has its highest feeding value when the grain has begun to form, before the plant begins to dry up. Green oats have rather more protein, and dairy farmers cannot have too much of this crop on their holdings. If the crop is intended to be fed green or made into ensilage, it should be cut in the milky stage.

All green fodders are more or less laxative, especially lucerne, so when fed in large quantities care should be taken that as soon as this condition is noted it should be corrected. Foods available for this purpose are pollard, crushed barley, and maize meal. Pollard, besides having a binding effect, is a rich food, and if used with a little care provides a useful addition to our cattle foods. Crushed barley also has a correcting influence, and is useful when fed during cold weather; being a carbonaceous food it provides large quantities of material for body heat. The use of barley cannot be recommended in conjunction with dry fodder, especially in warm weather.

Ensilage.—Ensilage can be manufactured with advantage from any of the above fodders; in fact, it is a suitable way of conserving fodders that are less suitable for hay, as maize, sorghum, millet, peas, &c. The composition of different fodders changes to a slight extent when made into ensilage. This is noticed principally with the flesh and fat formers, where a slight loss takes place. Still, as a means of providing a succulent food during periods of scarcity, it should engage the attention of all those who carry on dairying in districts that are subject to periods of scant pasture. Although lucerne makes good

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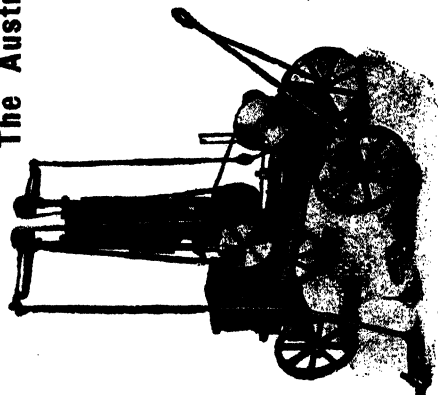
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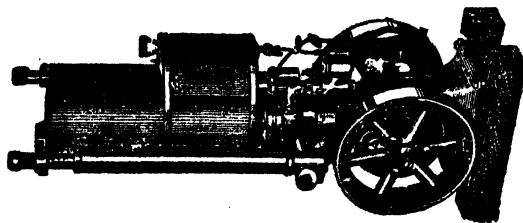
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ensilage, it can be used to better advantage as hay by feeding with ensilage made from other fodders.

Hay.—Hay made from leguminous crops such as lucerne and clovers, if properly cured, is highly palatable, and it contains a relatively large amount of protein, suitable for balancing a ration in which ordinary farm fodders are the bases. Of the cereal hays, oaten is best suited for milking stock. It is richer in protein than wheaten hay, and possesses the power of stimulating the milk flow in a greater degree.

Molasses.—Molasses mixed with water and sprinkled over an apparently dry and unpalatable food, and allowed to stand for about 24 hours, will undergo a slight fermentation, thereby rendering the foods more appetising and digestible. During times of drought, when there is a scarcity of succulent fodder, this may be used with advantage.

Wheaten Bran.—This is possibly the commonest of all concentrated foods used by the dairy farmers. It is very rich in protein, hence its value in building up a balanced ration with green fodders and silage. When other fodders, rich in protein, are available, such as lucerne hay, there is no necessity to use large quantities of bran. If, when using bran in conjunction with green fodders, the bowels are relaxed too much, a small quantity of pollard will be found beneficial.

Oats.—When used, should be crushed or bruised to make them easier to digest. They are a most valuable food for a cow in milk, especially immediately after calving; also useful in feeding of young calves. They are rich in both protein and carbohydrates.

A ration of cereal ensilage, bran and crushed oats makes a very suitable one for milk production; also oats have the advantage of enabling a butter of good flavor to be produced.

Maize Meal.—In America, corn meal is used to a very great extent in feeding cattle. It is very rich in fat-forming matter, and is a very useful addition to a ration fed to very high-producing cows, or cows that are liable to fall away in condition when giving milk. Also, it provides a valuable supplement to skim milk in the calf pen.

Oil Cakes.—There are two principal oil cakes used in Australia—linseed cake and cocoanut cake. Linseed cake, which is the residue after the oil has been expressed, is a very rich concentrated food, containing a high percentage of both protein and carbohydrates. The composition varies somewhat according to the process employed for the removal of the oil. It is a valuable food for growing animals, and is used in quantities up to 4lbs. per day. If fed heavily it may have a sickening effect on the cattle; also, the butter made from the milk of cows thus fed is inclined to be soft and oily. Whole linseed boiled to a jelly is very useful in the feeding of young calves in conjunction with skim milk. Cocoanut cake is not so rich in protein, but contains more fat, and is useful in balancing up a ration deficient in fat-forming materials.

RATIONS.

The following rations are suitable for a cow of 1,000lbs. live weight yielding 3galls. of milk a day. When the animal is heavier, and the production of milk greater, an increase in the amount is necessary.

No. 1. Where ensilage is available—		lbs.
Silage (wheat or oats)	50	
Hay (oaten or wheaten)	15	
Bran	6	
Crushed oats	4	
No. 2—		lbs.
Silage (maize)	50	
Lucerne hay	15	
Bran	4	
No. 3. When no ensilage or green fodder is available—		lbs.
Oaten chaff	20	
Bran	8	
Crushed oats	4	
No. 4—		lbs.
Chaff (oaten or wheaten)	20	
Lucerne hay	10	
Bran	4	
Maize meal	6	
No. 5. Where green fodder is available—		lbs.
Green maize	60	
Lucerne hay	20	
No. 6—		lbs.
Green maize	60	
Lucerne hay	10	
Crushed oats	6	
No. 7—		lbs.
Green lucerne (wilted)	50	
Chaff	10	
Bran	2	
No. 8—		lbs.
Green barley	60	
Crushed oats	8	
Linseed meal	2	
No. 9—		lbs.
Green oats	50	
Bran	8	
No. 10—		lbs.
Sorghum	60	
Lucerne hay	10	
Bran	4	
Linseed meal	2	

Mr. G. Mann (Younghusband) commented on the very rough way in which the statistics regarding the dairying industry were taken. The majority of farmers did not know the production of each cow to

give accurate figures. He asked whether it would be advisable to make ensilage on the River, where maize could be grown. Mr. Baker said it was always advisable to have ensilage on hand. It could be stored and kept for an indefinite period. Mr. W. Lang (Virginia) asked whether the writer of the paper had had any experience in feeding mangolds. Mr. Baker said he had not, but mangolds were a very valuable form of succulent feed, and would stimulate a heavy milk flow. Mr. R. Hicks (Yaninee) asked how long ensilage would keep. Mr. Baker stated that ensilage could be used directly it had been put into the silo, and it would keep for an indefinite period. Mr. N. McColl (Kalangadoo) said chou moellier was grown rather extensively in the South-East, and he desired to know whether it could be made into good silage. Mr. Baker said chou moellier was a fodder crop somewhat similar in type to rape, and it should be fed carefully to cows, because it was inclined to taint the milk. Before it was put into the pit or silo it should be allowed to wilt for a few days. Mr. A. E. Milne (Tatiara) asked: "Is wheaten hay cut green so good as oaten hay for cows?" Mr. Baker said oaten hay was better than wheaten hay. It contained more protein, but the crop should not be cut too green; the best time to cut the crop was when the grain was in the "milky" stage. Mr. W. Vigar (Mount Pleasant) desired to know whether natural grass was as good as oaten hay. Mr. Baker said when cows were pastured on young natural grasses some form of supplementary feed should be given, but when good natural grasses were thoroughly developed they were more valuable for dairy cows than oaten hay. In replying to a delegate from the Rapid Bay Branch as to whether he had had any experience in feeding giant sunflowers to cattle, Mr. Baker said sunflowers when about half developed had about the same feeding value as maize. Cows did not like sunflowers fully grown on account of the rough leaves and tough stems, but when the plants were made into ensilage the cows would eat every portion. Mr. H. Fewings (Pinnaroo) asked: "Do you recommend feeding cows liberally with oats before and after calving?" Mr. Baker said cows should be fed liberally before calving to repair the wastage. With cows susceptible to milk fever, the ration should always be slightly reduced just before calving. After an attack of milk fever the grain ration should be given in the form of bran mashes, so that it would have a medicinal effect on the animal. Mr. C. J. Tuckwell (Member of the Advisory Board of Agriculture) referred in eulogistic terms to the very valuable paper that had been presented to Congress by Mr. Baker. Dairymen frequently were in a good deal of doubt at certain times of the year as to the best rations to prepare for their stock, but a reference to Mr. Baker's paper would soon set them on the right track. He strongly urged every member of the Congress to take a copy of the paper home. It was a highly scientific paper, presented in a form that could be readily assimilated by the dairyman.

CONGRESS.

In opening the annual Congress of the Agricultural Bureau on Monday night, the Minister of Agriculture (Hon. T. Butterfield) stated that he would like to have the opinion of Congress on the advis-

ability of those gatherings being continued. He suggested as a substitute district conferences, which would be attended by departmental experts, and which would deal with the wants of particular districts. The Congress considered the Minister's suggestions, and decided unanimously that it would be a mistake to abandon the Congress, also that it viewed with disfavor any steps taken to reduce the number of experimental farms.

Mr. G. Jackson (Glossop), who moved the motion, said that on Monday evening the Minister had referred to the abolition of the Congress, and the substitution of District Conferences. He hoped the general Conference would not be abolished, but the man who went to the conferences and did not listen to all the papers was not a satisfactory delegate. The Minister had also hinted that he believed an exchange of views of men from the north with men from the south could not do much good, but he disagreed with him. The experimental farms in this State had been a great success, and the farmers should convey the information to the Minister that they were a good investment, and would be a better one if they were more widely distributed. Their itinerant instructors were very reliable and valuable men, and he would like to see more of them on the soldier settlements on the Murray. He moved "That this Congress of the Agricultural Bureau, in response to the invitation of the Minister of Agriculture, has given

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consideration to the suggestions submitted in his opening address, and begs to submit the following resolutions:—(1) That this Congress considers it would be decidedly detrimental to the agricultural interests of the State, as well as to the Agricultural Bureau system, to abolish the Congress, which as been annually held during the past 35 years, or interfere with the existing arrangements in connection therewith; (2) That this Congress is fully impressed with the value of experimental farms to the agricultural industry, and views with disfavour any steps to reduce their numbers; (3) That this Congress considers it of the utmost importance that more travelling instructors in agriculture should be appointed to the staff of the Department of Agriculture."

Mr. W. H. Lang (Virginia) seconded the motion. They ought to keep their annual Congress. A great deal of good was done by delegates going back to their districts and recounting what had happened at the conference. The farmers could not do without the experimental farms.

Mr. W. J. Marshman (Owen) said he was astonished to read the remarks of the Minister, and if the Government were thinking along those lines they could not be friends of the producers. The annual Congress was the one opportunity they had of exchanging views, and listening to papers by expert men, who were in the pay of the Government, and if they persisted in their attempt to abolish the Congress they were "talking through their hats." To experienced farmers nothing was better in an educational way than the experimental farms, because they demonstrated to them what could be done with all classes of land. They wanted to do all they could to encourage men to go out on poor class soils, and develop the country, and the experimental farms taught them how to do this. If they were neglected the farmers in this State would be up in arms.

Mr. A. Densley (Keith) said the last speaker had slightly misunderstood the Minister. What Mr. Butterfield had asked for was an expression of opinion from Congress on the advisability of continuing these gatherings annually instead of district conferences.

Mr. D. Butler (Butler) said the experimental plot in his district had been such a success that people came for 40 miles round to look at it. Its existence had made a vast difference to him as a farmer, and was of immense value to young agriculturists. It would be silly to think of abolishing the experimental plots.

The motion was carried unanimously.

MURRAY SWAMP EXPERIMENTAL STATION.

Mr. C. J. Tuckwell said the previous motion did not go far enough. There were a number of soldier settlers on the swamp blocks on the River Murray, and they had no scientific men to tell them how to develop those blocks along sound lines. They had been trying to get the Government to establish an experimental station on one of these swamp blocks, but without success. He moved: "That in view of the difficulties of the settlers on the reclaimed Murray swamps, and the number of unallotted swamp blocks, the Minister of Agriculture be

requested to reconsider his decision, and to establish an experimental station on a reclaimed swamp in the vicinity of Murray Bridge."

Mr. H. Brown (Port Elliot) seconded.

Mr. H. S. Taylor (Renmark) said it was pathetic to see how Governments spent thousands in settling and unsettling the land, but begrudged a few hundreds in teaching people how to remain on the land. He hoped the Minister would reconsider his decision not to establish an experimental farm.

The motion was carried.

FREE PARLIAMENT.

Mr. W. J. Williams moved on behalf of the Streaky Bay Branch:—"That an assistant be granted to the manager of each of the Government farms to allow the managers to visit all parts of their districts more often, and thereby be of more assistance to the primary producer." Mr. C. L. Campbell (Wirrulla) seconded. He spoke of the need of assistance for experimental farm managers.

Professor Perkins said he was of the opinion that the best advisers of the farmers were those who were working in the neighborhood, and these were the managers of experimental farms. They were in a better position to advise than officers from other parts of the State. The difficulty was for the manager to leave his farm for any length of time, owing to his responsibilities, and to the fact that he had no one to leave in charge.

The motion was carried unanimously.

Mr. A. Telfer moved on behalf of the Glencoe Branch:—"That the Government be urged to construct more new roads to serve primary producers outback, instead of spending so much money on arterial roads, principally used by commercial travellers and tourists."

Mr. F. L. Koop (Glencoe), in seconding, said the main arterial roads on which so much money was spent were not of much benefit to primary producers, but were maintained for the use of commercial travellers and tourists. The money could be better spent in making and maintaining roads for outback settlers, who were helping to build up the State and increasing its prosperity.

Mr. W. S. King moved as an amendment, that all the words in the motion from "outback" should be deleted. It was a mistake to say that the main arterial roads were of no use to the primary producer. The traffic on roads approaching a city was always heavier than elsewhere, and more money had consequently to be spent on their maintenance. Commercial travellers and tourists who owned motor cars also contributed to the upkeep of these roads.

The amendment was adopted, and the motion as amended was carried.

Mr. W. H. Richards moved on behalf of the Yacka Branch:—"That legislation should be introduced to provide for the simultaneous destruction of foxes along similar lines to those adopted for the destruction of rabbits." He said if the motion were carried and acted upon by the Government it would do more to increase the value of the wool clip than anything else the department's officers could do. It was

a common story to hear of one's neighbours having nearly all their lambs eaten by foxes, and in some instances farmers had given up breeding lambs altogether on account of the depredations of these animals. He would even go so far as to say that the present high price of mutton in the city was due to the destruction among sheep wrought by foxes.

Mr. W. Loller (Naracoorte) seconded the motion, which was carried unanimously, after being strongly supported by many delegates.

"That the Advisory Board be asked to divide the wheat crop competitions into two sections or classes, one for the heavy soil and one for the light or inferior soil," was a motion moved by Mr. A. O. Badman, on behalf of the Yacka Branch. He drew attention to the diversity of soils in the State, and pointed out the impossibility for farmers on light soils to compete equitably with farmers on heavy soils.

The motion was seconded by Mr. A. H. Lanyon (Blyth).

Professor Perkins said the matter was at present under consideration by the Board, and he asked that the motion should not be pressed at the present juncture, though he was quite in sympathy with its objects.

The motion was declared lost.

Rudall, Yadnarie, Roberts and Verran Branches forwarded a resolution asking "that the age limit for the Winter School at Roseworthy Agricultural College be reduced from 21 to 18." Mr. B. Evans (Roberts and Verran) moved the motion, which was seconded by Mr. A. Crabb (Rudall).

Mr. G. Jackson (Glossop) opposed the motion. Men over the age of 21 were more likely to benefit by the instruction than youths, who thought more about smoking cigarettes and the "clocks" on their socks than following the course prescribed.

Mr. R. Wheaton (McGillivray) said he was an old student of Roseworthy, and he felt sure the older men who knew something about farming would receive greater benefits from these schools than boys under 21.

Mr. W. J. Colebatch (Principal of Roseworthy College) said they had tried both systems at Roseworthy, and he would never agree to reducing the age to 18 unless driven to it at the point of the dagger. He did not believe in accepting youths who dangled their legs and smoked cigarettes, instead of paying attention to the instruction given. He would not ask expert officers of the Department and College who had made great sacrifices to attend these schools to lecture to such young men. It would be discourteous and unbecoming.

The motion was lost.

Mr. E. Rowe, on behalf of the Waikerie Branch, moved:—"That dried fruit be carried on the railways at the same rate of freight as wheat." Mr. E. Harden seconded, and the motion was carried.

A motion from Petina, "That flag smut be included in the investigations of the fungus take-all that are being carried out at the present time," was, at the instance of Messrs O. Withall and H. Doley, carried.

Mr. G. Jackson, on behalf of the Glossop Branch, moved—"That the Advisory Board be requested to make provision for an agricultural library, the volumes of which may be circulated amongst members conditionally on the Branch paying costs of transport." He said he did not think the Branch should rely on instructors alone. He thought the Government might subsidise libraries, which would assist Branches in their work.

Mr. J. Beare (Carrow) seconded the motion, which was carried.

Mr. H. W. Andrew, on behalf of the Berri Branch, moved:—"That the work of the Meteorological Department in South Australia be made more valuable to the producer, especially in the fruit-growing areas on the River Murray, and during the drying seasons, by expediting the despatch and posting-up at post-offices of weather forecasts, and by establishing official climatological stations at suitable centres on the irrigation areas." The motion was seconded by Mr. A. W. Magarey, and carried.

Mr. T. George brought forward a motion from the Coonaipyn Branch—"That in replies to urgent inquiries of sickness in animals, the department be empowered to purchase what medicines are necessary, if requested, and forward same to person inquiring, thus saving time and giving animals a better chance by obtaining medicines sooner; parcels could be made payable on delivery at the post office." Mr. J. Cronin seconded the motion, which was carried.

"That Congress protests against the high price charged for seed wheat at the Government Experimental Farms," was a motion from the Taplan Branch. The mover pointed out that if seed wheat were sold at a lower rate settlers, especially on new blocks, would benefit greatly.

Mr. O. Withall seconded the motion.

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on behalf of growers.

Special attention devoted to Sale and Purchase of best types of Wheat, Oats,
Barley, Lucerne, Sudan Grass, and other Cereals.

Four, Bran, Pollard, New and Second-hand Cornsacks at Lowest Current Rates.

Mr. A. L. Molineaux (Tarlee) opposed it. The seed he had purchased from the Roseworthy College was worth twice the price he had given for it. The increased yield received in the first year amply compensated for the slightly increased price charged by the experimental farms.

Mr. F. Coleman (a member of the Advisory Board of Agriculture) said they were indebted to the Government farms and Roseworthy College for the supply of seed wheat to the farmers. He was satisfied that the trouble entailed in selecting good seed wheat was well worth the extra price. There was a great deal more work in growing seed wheat than the majority of them realised.

Professor Perkins said seed wheat sold at 6s. a bushel did not pay.

The motion was lost.

For the Cherry Gardens Branch, Mr. W. Basey moved:—"That the Minister of Agriculture be requested to endeavour to secure a reduction in Government cold storage charges on export fruit." Carried.

Mr. W. Marshman moved on behalf of the Owen Branch:—"That the Government adopt the New South Wales system of distribution of seed wheat." He said that if it were possible by the introduction of good seed wheat to raise the production one bushel per acre in this State it would mean a gain of £700,000.

Mr. R. Hicks (Yaninee) seconded, and the motion was carried.

"That a veterinary surgeon should be appointed for the West Coast," was moved on behalf of the Petina Branch by Mr. O. Withall. Mr. F. Doley, in seconding, said a veterinary surgeon should be stationed at Port Lincoln. The motion was carried unanimously.

Mr. J. T. Beare moved on behalf of the Carrow Branch:—"That the Government should introduce legislation to fix a maximum profit on cornsacks, or, alternately, import cornsacks or publish in the *Agricultural Journal* monthly overseas and local prices of cornsacks." He said if the Government were to find out what the manufacturer charged they would thus have a check on the merchants. He was afraid the merchants were charging extortionate prices.

Mr. Cooper seconded the motion, which was carried.

Mr. C. Buck (Shoal Bay) moved:—"That Congress again bring before the notice of the Government the necessity for the compulsory registration of stallions, and urge the elimination of all unsound animals." Mr. V. Cook (Cygnet River) seconded, and the motion was carried.

Mr. J. Hudd, a delegate of the Black Springs Branch, moved:—"That the Government be urged to provide the Stock and Brands Department with sufficient funds to enable it to investigate the mortality among sheep at the time stinkwort is in flower." Mr. C. Heinrich seconded, and the motion was carried.

On the motion of Mr. T. Howlett (Arthurlton), seconded by Mr. J. Alder (Penola), it was decided that the Y.M.C.A. should be thanked for their courtesy in placing the smoke room, reading room, and lounge at the disposal of delegates.

ORCHARD NOTES FOR SOUTHERN DISTRICTS.

[By C. H. BEAUMONT, Orchard Instructor and Inspector.]

Spray, spray, spray, always remembering that thoroughness is more than half the secret of success. Spraying is practically the only way we have at present of controlling insect or fungus disease; in a few years' time probably dusting will have first place. Vignerons are the only section of growers who use dust to any extent now, that is sulphur dust for oidium, and they will be wise if they also give some attention to copper lime dust to prevent downy mildew. The use of copper dust is found to be good for the wheat grower, and the fruit grower will need to try out the method, too.

The three most important contact insecticides are lime-sulphur, oil emulsion, and nicotine with soap.

The standard fungicides are Bordeaux mixture and lime-sulphur solution.

The only poison spray used to any extent is lead arsenate.

With the early season, the work of prevention of fungus pests will have been completed before this in print, and our principal spraying will be dealing with insects. Of these, codlin moth will be the most important; this is the most serious pest of apples and pears. It is of the utmost importance that the spray be applied at the right time; no other orchard work should be permitted to interfere with this. The calyx spray is the most important of any, and must on no account be neglected; a further spray within a fortnight is good practice, and tends to make assurance doubly sure. The number of additional sprays will depend on the variety of fruit and on the weather; in South Australia the fruit must always have a coat of spray on it. Use a spreader with all sprays, and you will have done all that is humanly possible to check the work of the moth. Some lime sulphur at times will keep off "scab," and can be added to the arsenate of lead; 1lb. of powder in 30galls. of water is strong enough for codlin moth. For curculio use 1lb. in 8galls. This will also destroy cut worms.

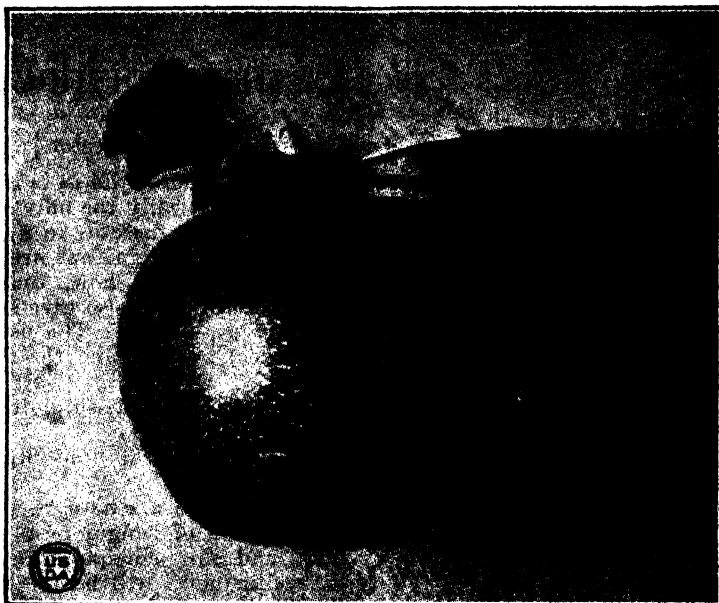
For thrip and red spider use lime sulphur or wettable sulphur. This can be used on vegetables as well as fruit, and is very effective.

For aphides use Black Leaf 40 (nicotine) with soap as often as found necessary. Some day "Nicodust" will be used for all aphides except "woolly aphs."

Vines must be constantly watched for downy mildew.

Keep soil loose and free from weeds. Get trays and boxes ready. Clean and paint ploughs, and put under cover. Get your dehydrator built.

In the Orchard Notes for the month of September published in the last issue, reference was made to the use of spreaders in sprays for the control of Codlin Moth. The accompanying plates reproduced from *Farmers' Bulletin No. 1326* of the United States Department of Agriculture illustrate the remarks in last month's notes.



1. Apple Covered with Fine Drops of Spray.

[Reproduced from United States Department of Agriculture Farmers' Bulletin, No. 1326.]



2. Apple Oversprayed Until Coarse Drops Have Formed.

[Reproduced from United States Department of Agriculture Farmers' Bulletin, No. 1326.]



3. Apples Sprayed With Arsenate of Lead to Which a Cassia Spreader has Been Added.

[Reproduced from United States Department of Agriculture Farmers' Bulletin, No. 1326.]

**IMPORTS AND EXPORTS OF FRUITS, PLANTS, ETC.,
AUGUST, 1924.**

IMPORTS.

Interstate.

Apples (bushels)	1
Bananas (bushels)	15,686
Oranges (bushels)	5
Passion fruit (bushels)	608
Pineapples (bushels)	1,070

IMPORTS AND EXPORTS—*continued.*Imports (Interstate)—*continued.*

Tomatoes (bushels)	1
Nuts (packages)	5
Cabbages (packages)	10
Cauliflowers (packages)	13
Potatoes (packages)	28,582
Swedes (packages)	192
Bulbs (packages)	20
Plants (packages)	61
Seeds (packages)	25
Trees (packages)	59
Wine casks, empty (number)	4,008
Fumigated—29 packages trees, and 29 wine casks.	
Rejected—2 bushels oranges, and 1 package plants.	

Overseas.

Federal Quarantine Act.

2,276 packages seeds, &c.

EXPORTS.

Federal Commerce Act.

2,219 packages citrus fruit, 175 packages other fresh fruit, 26,418 packages dried fruit, 53 packages honey, 1 package plants, and 235 packages potatoes were exported to overseas markets. These were consigned as follows:—

London.

Dried fruit	21,311
Citrus fruit	181
Honey	41

India and East.

Dried fruit	180
Plants	1
Citrus fruit	26
Potatoes	235
Apples	175

New Zealand.

Dried fruit	2,176
Citrus fruit	2,012

South Africa.

Dried fruit	1,751
-----------------------	-------

Vancouver.

Dried fruit	1,000
-----------------------	-------

Hamburg.

Honey	12
-----------------	----

TAXATION TIME IS HERE!!

All Income Tax Returns for the 12 months ended June 30th are now due.

SAVE TIME, WORRY, AND MONEY

Write us to-day, stating your occupation, and we will mail by return a form which will make taxation EASY. You will SAVE TIME AND WORRY by following our simple method, and, in addition, SAVE MONEY, because your returns will be correctly prepared and your taxable income reduced to a legitimate minimum by claiming all allowable deductions.

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(Late of State Taxation Dept.)**

**A. SAIDE, A.F.I.A., Secretary
(Late of Federal Taxation Dept.).**

ADVISORY BOARD OF AGRICULTURE

The monthly meeting of the Advisory Board of Agriculture was held on Monday, September 8th, there being present Mr. W. S. Kelly (Chairman), Capt. S. A. White (Vice-Chairman), Professor A. J. Perkins (Director of Agriculture), Messrs. C. J. Tuckwell, W. J. Colebatch, B.Sc. (Agric.), M.R.C.V.S. (Principal of the Roseworthy Agricultural College), Col. Rowell, Messrs. L. Cowan, B.Sc., F. Coleman, A. B. Feuerherdt, H. Wicks, F. Julius (Conservator of Forests), J. W. Sandford, P. H. Jones, H. S. Taylor, and the Secretary (Mr. H. J. Finnis).

Apologies were received from Messrs. Geo. Jeffrey and A. M. Dawkins.

Afforestation on the River Murray.—Mr. H. S. Taylor moved:—"That the Government be asked to proclaim all unalienated red gum and box gum flats adjacent to the River Murray as forestry reserves, the same to be placed under the control of the Forestry Department, to be administered primarily in the interests of the irrigation settlements." Capt. S. A. White seconded, and it was decided to forward the resolution to the Minister.

Eradication of Take-all.—This matter was again brought before the Board, when it was decided that the Secretary should arrange a meeting between Mr. G. Samuel, B.Sc. (Lecturer in Plant Pathology at the University), Mr. W. Heithersay, and the Chairman of the Board (Mr. W. S. Kelly), with a view of Mr. Heithersay's formula for the destruction of take-all being put to the test.

Export of Peas.—A report was secured from the Trade Commissioner in London relating to the price of peas and the prospect of marketing South Australian grown peas in that centre. Also samples of different types received on that market were exhibited.

Resolution from Southern Conference.—The following resolution was carried at the Southern Conference:—"That all rams sold at auction be true to type." The Board decided to "receive" this resolution. The Conference also decided, "That the Impounding Act be amended to give district councils the same power as corporations to deal with and prevent the grazing and straying of stock on roads." It was decided that the resolution should be brought under the notice of the Local Government Department.

Wettable Sulphur.—The Longwood Branch suggested that the Board should take steps to obtain samples of Wettable sulphur, an insecticide, from California, and have same tested at the Government Orchard. The Horticultural Instructor (Mr. Geo. Quinn), who was asked to express an opinion on the proposal, said this form of sulphur appeared to be unknown to the manufacturers of fungicides and insecticides in South Australia. "If the Hon. the Minister of Agriculture is disposed to permit of the expenditure of a small sum I could," continued Mr. Quinn, "take steps to procure a sufficient quantity, say, a couple of hundredweights, to put to test on, say, Bryobia mites, which widely infest plum, almond, apple, and other

fruit trees in this State. No mention is made of the superior value of Wettable sulphur in the latest 'Californian Spray Program,' set out in great detail in the Pacific Rural Progress of November 10th, 1923, for the treatment of all orchard pests. In fact, it is not classed as equal to lime sulphur compounds, which we also use against these mites." On the motion of Mr. J. W. Sandford, seconded by Capt. White, it was decided to forward the Longwood Branch a copy of the report of Mr. Quinn.

Suggested Offer of Prize for Paper.—The Renmark Branch suggested that the Advisory Board give a prize for a paper containing the best practical suggestions for reducing costs of producing dried fruit. The Secretary was instructed to inform the Branch that the Board had no funds available for the purpose, and that members could not establish a precedent by granting a prize to any Branch or group of Branches.

Destruction of Crows and Starlings.—The Block "E" Branch asked whether the Board could suggest any methods of dealing with crows and starlings. The Secretary was instructed to advise the Branch that Capt. White was visiting the River Murray early next month, and would, if the Branch so desired, discuss the matter with members of the Block "E" Branch.

Capt. White moved, and Mr. F. Coleman seconded, "That the Board indorses the resolution carried at the Agricultural Section of the Science Congress 'That it is essential for the development of forestry

"The Ideal Tractor under
Australian Conditions."

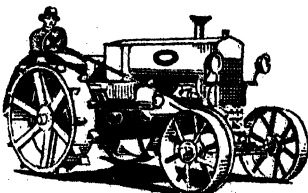
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In Your District?

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that a school for provisional training should be established for the whole of Australia, that it is considered that this should be done by completing the school now existing in the University of Adelaide, and that the Federal Government be requested to give effect to this recommendation.' "

Life Membership.—The names of J. Rankine and F. W. Allison, of the Strathalbyn Branch, were added to the roll of life members of the Agricultural Bureau.

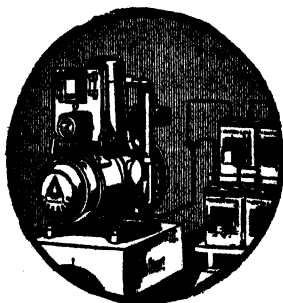
New Branch.—Approval was given for the formation of a Branch of the Agricultural Bureau at Wauraltee, with the following gentlemen as foundation members:—B. G., R. J., S. G, T. H, M. Newbold, J. T. and V. Mahar, C. and T. C. Illman, H. A. and W. Glacken, T. Mahar, G. Twelftree, D. and V. Feehan, D. A. and A. Carmichael, A. Mitchell, F. Collins, J. Tomney, G. Martin.

New Members.—The following names were added to the rolls of existing Branches:—Brinkworth—C. E. A. Weckert, T. E. Dolling; Wirrabara—H. Neild, C. A. J. Dettmer, G. Sizer, W. Richter; Waikerie—J. L. Smith, G. E. Schenke, R. J. Schomburg, J. Latter, F. J. Elliott; Halidon—B. Pope; Williamstown Womens'—Mrs. A. Bain, Mrs. G. A. Ledischke, Mrs. A. Williams; Blyth—Mullins, J. A. Webber, G. Crawford, P. Slattery, B. Nitz, — Hastings; Mount Barker—E. H. F. Muecke; Lameroo—F. R. Koch; Elbow Hill, C. Rehn; McLachlan—B. Garratt, E. Cabot, V. Pearce; Watervale—J. O. Donnell, J. W. Thomson, F. J. Smith; Mount Gambier—R. Hutchesson, S. Chesson, H. McEachern, J. Guerin, T. Vanse; Wynarka—L. Henderson, L. Russell, J. R. Rockham, J. Boyce, F. Hewett, A. Justice, W. Page; Gumeracha—G. Higgins, W. A. Boerthe, A. M. Cornish; Virginia—L. Rowland; Yacka—W. G. Allanson; Mannanarie—R. Campbell, G. McKay, H. Symons; Owen—R. McKenzie; W. H. Cabbit; Gulnare—R. R. Badman; Saddleworth—W. Schonsoher, H. Schirmer, A. Schirmer, L. Tune, W. Ashton; Tweedvale—B. A. B. Kramer, L. Minogue, L. L. Larwood, C. F. Aufderheide, J. R. Pfeiffer; Longwood—R. Coles, A. Roebuck; Mypolonga—F. Hepworth; Lyndoch—J. H. McDonald; Redhill—T. Clothier; Wirrulla—N. Kelsh; Taplan—E. L. Winton, H. Follett; Strathalbyn—H. Keonnecke, S. C. Crawford, L. Harrington; Karoonda—F. Vivian, K. Rudd, R. H. Harrold; Charra—C. Barnet, E. Schultz, M. McInerney; Streaky Bay—C. C. Murdoch, B. Bodell, N. Eddy, W. Mathews, jun., C. E. Mudge; Willowie—A. Schmidt; Mallala—G. A. Morphett, J. McCabe; Lenswood and Forest Range—J. Harrison, G. Schultz; Maltee—F. A. G. Edson; Arthurton—J. Harmer; Tarlee—W. H. D. Neate; Big Swamp—R. H. Chapman; Georgetown—A. Treasure; Kangarilla—J. White; Yallunda—R. W. Cook; Lucindale—A. G. Nosworthy, C. Williams, A. Williams, S. Langberg, F. Grieg, W. O. Smith; Moonta—F. Howlett; Spalding—A. Cowley, D. Pryde, A. Stephenson, C. Laycock, W. Pryde, J. Walsh; Coomandook—A. Butler, G. Goodale; Renmark—B. H. Jungfer; Lake Wangary—T. Houston; Goode—W. Nicholls, A. Dupree, K. Cooper; Rapid Bay—S. Slater; Lenswood and Forest Range—J. Trevener, W. Alexander; Brentwood—J. Raddow, N. Grove-Jones, F. Lea, J. Johnson; Williamstown—R. Filsell.

MILANG HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS, AUGUST 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during August.	Per Cow during August.	Per Cow May to August.	Per Herd during August.	Per Cow during August.	Per Cow May to August.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
4/A	27	24	14,198	525.85	2,041.95	615.94	22.81	88.47
4/B	40-32	32.81	23,472.5	582.33	1,677.06	938.82	23.29	80.40
4/C	29	22.65	9,353.5	322.53	1,255.47	328.89	11.34	49.39
4/D	23	21	21,245.5	923.72	3,008.96	804.40	34.97	113.07
4/E	20	18	9,129.5	456.48	2,011.94	341.71	17.09	75.21
4/F	20	18.23	8,715	435.75	1,621.95	371.86	18.59	69.98
4/G	27	22.19	13,748	509.18	1,576.06	505.71	18.73	60.23
4/H	25-03	18.45	13,991	558.97	1,655.81	626.70	25.04	71.10
4/I	24	17.74	8,805	366.87	1,384.51	379.85	15.83	59.51
4/J	50-35	29.87	22,312.5	443.15	1,077.62	850.98	17.02	38.03
4/K	16	13.29	6,340	396.25	1,580.97	267.09	16.69	69.33
4/L	32	27.61	12,965	404.84	1,427.12	598.79	18.71	64.95
4/M	22	17.84	11,331.5	515.07	1,487.86	466.72	21.21	57.80
4/N	43	39	30,783	715.88	2,342.06	1,169.07	27.19	89.72
4/O	42	42	34,720	826.67	2,775.42	1,468.01	34.95	111.79
4/P	53-90	31.35	16,003.5	296.91	746.05	555.41	10.30	28.37
4/Q	48	28.55	19,623	408.81	1,322.13	813.34	16.95	51.88
4/R	13-84	10	8,416.5	608.13	1,802.89	371.14	26.82	79.88
4/S	21	19.13	8,465.5	403.12	—	389.75	18.56	—
Means	30.39	23.88	15,453.08	508.47	1,665.72	624.75	20.56	66.30

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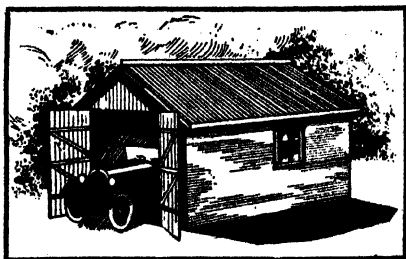
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GLENCOE HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR AUGUST, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during August.	Per Cow during August.	Per Cow October to August.	Per Herd during August.	Per Cow during August.	Per Cow October to August.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
3/A	18	12-29	8,888	493-78	7,459-83	370-70	20-59	315-37
3/B	16	5-10	3,323-5	207-72	3,369-96	125-66	7-85	147-30
3/C	11	7-39	7,344-5	667-68	7,026-28	280-38	25-49	286-41
3/D	11	7-42	3,696-5	336-04	5-819-82	141-46	12-86	225-63
3/E	14-03	9-29	6,622-5	472-02	6,055-61	273-37	19-48	263-55
3/F	9-42	6-64	4,561	484-18	5-580-59	185-95	19-74	231-54
3/G	12	7-13	4,337	361-42	6,030-21	178-38	14-87	234-10
3/H	16	9-97	8,263	516-44	4,988-05	338-01	21-13	197-01
3/I	13-45	5-35	2,760-5	205-24	5,072-45	128-70	9-57	218-36
3/J	17-55	7-19	2,052	116-92	3,604-54	83-93	4-78	164-31
3/K	21-26	11-77	8,158-5	383-75	5,499-29	316-47	14-89	233-30
3/L	24	15-55	11,364-5	473-52	5,012-33	492-39	20-52	209-62
3/M	12	7-58	3,396-5	275-07	4,402-93	141-40	11-43	190-66
3/N	17	11-97	8,353-5	491-38	5,266-77	334-93	19-70	227-19
3/O	17-29	6-03	2,520	145-75	4,032-55	108-99	6-30	154-92
3/P	16	6-42	3,734	233-38	3,167-32	144-33	9-02	126-42
3/Q	50-61	24-87	14,449-5	285-51	4-515-64	595-83	11-77	189-41
3/R	16	11-39	10,632	664-50	6,915-56	462-42	28-90	302-47
Means	17-37	9-63	6,358-72	366-13	5,150-62	261-29	15-05	216-21



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RIVER MURRAY HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR AUGUST, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during August.	Per Cow during August.	Per Cow October to August.	Per Herd during August.	Per Cow during August.	Per Cow October to August.
1/C	36.58	30.23	34,904	954.18	8,349.27	1,363.56	37.28	326.15
1/J	17.06	9.81	7,962.5	456.11	4,783.16	383.17	21.93	224.60
1/L	17.42	13.71	10,984	630.54	6,143.09	503.63	28.91	275.91
1/M	22.93	17.97	11,976	499.37	4,501.60	630.48	26.33	230.85
1/R	18.10	11.58	7,704	421.98	4,666.20	407.44	22.32	233.38
1/T	14	11	9,136.5	652.61	5,583.27	486.46	34.74	293.34
1/Y	11	10	7,347	667.91	6,505.52	359.14	32.65	300.94
1/Z	15.29	11.10	6,942.5	341.84	5,711.85	340.14	16.89	265.99
1/DD	24.48	20.26	16,532.5	675.35	6,316.01	777.80	31.77	277.85
1/EE	16	11.23	7,700	437.45	6,168.61	361.14	20.53	291.45
1/FF	14.42	9.65	8,466	587.10	6,382.09	376.90	26.14	274.04
1/GG	15	10.97	5,538	369.20	6,703.42	275.83	18.39	312.18
1/II	13.10	13	12,756.5	973.78	7,889.96	539.91	41.21	336.23
1/JJ	12	10.16	6,542	545.17	6,013.29	329.81	27.48	275.64
1/KK	13	10.71	8,601.5	661.65	6,457.38	398.62	30.66	285.58
1/MM	24.13	16.19	8,981.5	372.21	5,773.96	426.93	17.69	278.39
Means	17.78	13.60	1,075.47	604.81	6,150.19	497.56	27.98	276.47

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MOUNT GAMBIER AND DISTRICT HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR AUGUST 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.		Butterfat.	
			Per Herd during August.	Per Cow during August.	Per Herd during August.	Per Cow during August.
			Lbs.	Lbs.	Lbs.	Lbs.
2/K	24.39	14.10	12,400	508.41	502.91	20.62
2/L	21.32	13.65	8,404	394.18	378.63	17.76
2/V	24	9.97	6,043.5	251.81	273.12	11.38
2/Y	11.35	7.84	7,480.5	659.07	298.90	26.33
2/Dd	15	13.94	14,585	972.33	662.41	44.16
2/Ed	7	5	4,340	620.00	193.27	27.61
2/Ff	10	7.45	7,784.5	778.45	319.52	31.95
2/Gg	9	8.48	6,130.5	692.17	255.46	28.38
2/Hh	10	7.42	8,008.5	800.85	302.46	30.25
2/Ii	10	7.84	6,605	660.50	306.33	30.63
Means	14.21	9.57	8,179.05	575.75	349.30	24.59

THE AGRICULTURAL OUTLOOK.

REPORTS FOR THE MONTH OF SEPTEMBER.

The following reports on the general agricultural condition and outlook of the areas represented by the Government Experimental Farms mentioned below have been prepared by the respective managers:—

Booborowie.—Weather—The weather for September has been ideal, plenty of rain and comparatively warm weather; 255 points of rain have been registered up to the time of writing. Crops—The crops are looking remarkably well, and some heavy hay and grain crops should be harvested, given a few more showers. Natural feed is abundant, excepting where fields are overstocked. Stock—Live-stock are all in good condition and in good health. Pests—There are no pests worth mentioning. Miscellaneous—Farmers have nearly all finished fallowing, and have commenced working the fallow.

Turretfield.—Weather—This month has been the wettest for the year—a total of 298 points were registered—rain falling on 19 days. Most of the rain fell steadily, and soaked into the land. Crops—The crops are showing much improvement, the rain of this month being of great benefit. There will be some fairly heavy hay cuts. Some of the crops are weedy and dirty. Natural feed is not too abundant. This is not a district that grows a heavy supply of feed. Stock are in nice order, some nice lambs are to be seen where sheep are kept. Pests—Woolly caterpillars are very thick, and doing damage to the gardens. Miscellaneous—Shearing is being held up by the wet weather.

METROPOLITAN ABATTOIRS, ADELAIDE.

MANUFACTURERS OF

MEAT MEAL FOR PIGS

Read Report of trials made by PROF. PERKINS, *Journal of Agriculture*,
January and July, 1921.

MEAT MEAL }
BONE MEAL } FOR POULTRY
BONE GRIT }

For full information on above write to

The GENERAL MANAGER, Metropolitan Abattoirs Board, Box 578,
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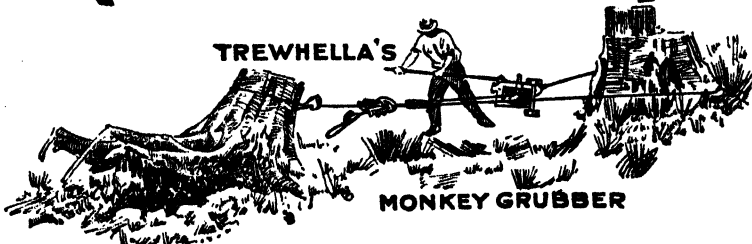
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BONE MANURE

260 MEN FOR YOUR STUMP GRUBBING

With these men at your disposal you could do quite a lot of clearing. In the "**Monkey**" Grubber you get their strength, without the upkeep, in a simple, compact, easy-to-handle form. With the short lever supplied, the power is in your own hands. This sturdy machine is equipped with ropes equal to the heavy demands made on grubbing tackle, and each is fitted with hook and loop couplings—splices and loose pins have been banished. A fast gear and rope shortener help you to get quickly to the actual pull, and an automatic lowering gear allows you to release from a strain. Standard equipment will clear $1\frac{1}{2}$ acres from an anchor.

**REMEMBER! FOR YOUR GRUBBING
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From the Jack People,
TREWHELLA BROS. PTY. LTD., TRENTHAM, VIC.

DAIRY AND FARM PRODUCE MARKETS.

A. W. Sandford & Co., Limited, reported on October 1st, 1924:—

BUTTER.—As anticipated after the good rains throughout the dairying districts of this State, heavy quantities are coming forward, and very substantial parcels have been shipped to London during the month, whilst trade in all grades has been done in Western Australia. As regards values, slight fluctuations took place, and at the close of the month values were as follows:—Choicest factory and creamery fresh butter in bulk, 1s. 5½d.; first-grade bulk, 1s. 4½d.; second and third grade bulk, 1s. 2½d. to 1s. 3d.; best separators and dairies, 1s. 3d. to 1s. 5d.; fair quality, 1s. 2d. to 1s. 2½d.; store and collectors', 1s. to 1s. 2d. per lb.

EGGS.—Each week increasing quantities arrived, but the active demand from local picklers and pulpers, also interstate inquiries, kept stocks well cleared. Values recorded an easing since our last quotations. Fresh hen, 1s.; duck, 1s. 1d. per dozen.

CHEESE.—With us the local buyers have been operating freely, whilst fair export trade has been done with Western Australia in new makes. The South-Eastern factories have been sending along heavy quantities, but all coming forward have been cleared practically from week to week. Values at present are firm for new makes at 8d. to 9d. per lb. for large to loaf; semi-matured and matured, 10d. to 11d. per lb. for large and medium sizes.

HONEY.—A slump in values for all grades took place about three weeks ago, but since then the interstate and local purchasers have cleared big quantities of the best-quality candied and liquid consignments, whilst the lower grades have been neglected, and large stocks remain unsold. Prime cleared extracted in liquid condition, 4½d. to 4¾d.; best-quality candied lots, 4¾d.; lower grades, 3d. to 3½d.; beeswax, readily saleable, at 1s. 4d. to 1s. 4½d. per lb.

ALMONDS.—The improvement in values induced bigger quantities to be forwarded, and good trade has been done with all classes, including kernels, which have advanced considerably, Brandis realising 9d. to 9½d.; mixed softshells, 8½d. to 8¾d.; hardshells, 3½d. to 4d.; kernels, 1s. 10d. to 1s. 10½d. per lb.

BACON.—There has been a very good demand for well-established brands, and values remain unaltered, supplies being equal to requirements, excepting with rolls, parcels of which have been imported from Victoria. Local hams, 1s. 5½d.; best factory-cured sides, 1s. 3d. to 1s. 3½d.; Hutton's "Pineapple" rolls, 1s. 3d.; Hutton's "Pineapple" sides, 1s. 3d.; Hutton's "Pineapple" middles, 1s. 7d. Hutton's "Pineapple" hams, 1s. 8d. to 1s. 9d. per lb.

LARD.—Active demand for Hutton's "Pineapple" lard in packets, 10d.; in bulk, 9d. per lb.

LIVE POULTRY.—As expected at this time of the year, supplies have decreased, which is unfortunate, as buyers have been operating extensively for all classes of fowls, with the result that high prices were obtainable. Each auction held was well attended by buyers, and spirited bidding was experienced with all lots submitted. The same position applies to turkeys, and as these excellent prices seem assured for some weeks to come we strongly advise farmers to forward their surplus poultry at their earliest convenience. Crates obtainable on application. The following rates ruled at our last auction:—Prime roosters, 5s. to 7s. 6d. each; nice-conditioned cockerels, 3s. 9d. to 4s. 9d.; poor-conditioned cockerels, 2s. 9d. to 3s. 3d.; plump hens, 4s. to 5s. 6d.; medium hens, 3s. to 3s. 9d.; geese, 7s. to 8s.; ducks, good condition, 4s. to 6s. 6d.; ducks, fair condition, 3s. to 3s. 9d.; turkeys, good to prime condition, 1s. to 1s. 4d. per lb. live weight; turkeys, fair condition, 9½d. to 11½d. per lb. live weight; turkeys, fattening sorts, lower; pigeons, 10d. each.

POTATOES.—Prime potatoes, at 5s. to 6s. 9d. per cwt. on rail, Mile End.

ONIONS.—Best brown onions, at 28s. per cwt., on rail.

RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of and to the end of September, 1924, also the average precipitation to the end of September, and the average annual rainfall.

Station.	For Sept., 1924.	To end Sept., 1924.	Av'ge To end Sept.	Av'ge. Annual Rainfall	Station.	For Sept., 1924.	To end Sept., 1924.	Av'ge To end Sept.	Av'ge. Annual Rainfall
FAR NORTH AND UPPER NORTH.					LOWER NORTH—continued.				
Oodnadatta	0.23	1.79	3.78	4.94	Spalding	2.89	15.44	15.93	20.27
Marree	0.38	2.36	4.45	6.07	Gulnare	3.14	18.56	15.37	19.36
Farina	0.55	2.34	5.09	6.66	Yacka	2.14	15.54	12.44	15.48
Copley	0.76	2.80	6.56	8.39	Koolunga	1.57	13.50	12.73	15.69
Beltana	0.61	2.61	6.92	8.97	Snowtown	1.73	12.51	13.04	16.07
Blinman	0.91	4.10	8.92	12.53	Brinkworth	1.78	13.75	13.05	16.36
Tarcoola	0.45	3.65	5.76	7.74	Blyth	2.37	15.71	13.68	17.08
Hookina	0.99	4.76	10.35	13.46	Clare	3.88	22.09	19.17	24.68
Hawker	1.13	5.93	10.21	12.92	Mintaro	4.31	20.34	19.38	23.57
Wilson	0.94	5.68	8.90	12.58	Watervale	4.18	22.36	20.54	27.54
Gordon	0.83	5.26	8.84	11.55	Auburn	3.60	17.10	18.04	24.35
Quorn	1.54	6.74	11.26	14.21	Hoyleton	1.90	12.15	14.19	17.91
Port Augusta	0.67	6.58	7.52	9.67	Balaklava	1.80	10.88	12.81	15.95
Port Augusta West	0.59	5.97	7.71	9.71	Port Wakefield	1.15	10.80	10.84	13.28
Bruce	1.16	5.53	8.24	10.77	Terowie	2.02	9.03	10.59	13.62
Hammond	1.46	6.95	9.30	11.91	Yarcowie	1.40	8.31	11.17	14.22
Wilmington	1.92	11.98	14.84	18.29	Hallett	2.59	14.56	12.97	16.49
Willowie	1.13	8.00	11.21	12.57	Mount Bryan	2.67	15.85	12.64	16.81
Melrose	2.95	16.25	19.10	23.40	Koorunga	2.85	14.99	12.54	18.06
Boomeroo Centre	2.14	11.34	12.50	15.65	Farrell's Flat	2.98	15.14	15.43	19.00
Port Germein	1.85	10.01	10.08	12.89	WEST OF MURRAY RANGE.				
Wirrabara	3.37	15.68	15.56	19.78	Manoora	3.23	16.25	15.38	18.93
Appila	2.37	13.61	11.64	15.00	Saddleworth	3.31	15.39	16.98	19.78
Craddock	0.90	4.62	7.92	11.52	Marrabel	3.22	16.41	16.07	19.78
Carrieton	1.30	5.34	10.03	12.90	Riverton	3.33	18.27	16.81	20.79
Johnburg	1.01	4.99	8.36	10.91	Tarlee	3.45	16.33	14.49	17.93
Eurelia	1.30	6.08	10.60	13.54	Stockport	3.16	14.94	13.34	16.63
Orroroo	1.35	6.73	10.77	13.73	Hamley Bridge	2.63	14.64	13.43	16.59
Nackara	1.54	6.32	9.37	11.99	Kapunda	3.35	17.33	16.05	19.99
Black Rock	1.45	7.34	9.97	12.75	Freeling	2.52	13.56	14.48	17.99
Uoolta	0.89	5.04	9.27	12.04	Greenock	4.64	18.85	17.52	21.68
Peterborough	2.04	10.86	10.48	13.53	Truro	3.91	18.35	16.46	20.26
Yongala	2.51	12.09	11.34	14.58	Stockwell	4.03	18.35	16.39	20.32
LOWER NORTH-EAST.					Nuriootpa	4.07	14.83	17.05	21.00
Yunta	1.20	3.39	6.61	8.88	Angaston	4.21	18.37	18.36	22.53
Waukarina	0.91	3.69	5.40	8.54	Tanunda	3.72	17.24	18.20	22.24
Mannahill	1.17	4.53	6.37	8.67	Lyndoch	4.31	20.51	19.09	22.93
Cockburn	0.71	3.54	6.18	8.31	Williamstown	4.42	21.11	22.94	27.48
Broken Hill, N.S.W.	0.58	3.46	7.58	9.98	ADELAIDE PLAINS.				
LOWER NORTH.					Mallala	2.21	14.25	13.65	16.72
Port Pirie	1.74	11.11	10.70	13.55	Roseworthy	3.02	15.02	14.08	17.36
Port Broughton	1.24	12.23	11.65	14.29	Gawler	3.65	17.29	15.54	19.11
Bute	1.67	12.58	12.99	15.78	Two Wells	2.68	15.24	12.98	18.88
Laura	3.26	15.33	14.71	18.26	Virginia	2.72	14.74	14.03	17.32
Caltowie	2.55	15.09	12.56	17.20	Smithfield	3.41	16.70	14.11	17.24
Jamestown	3.03	17.48	14.12	17.89	Salisbury	3.44	16.16	15.22	18.51
Gladstone	3.01	19.09	12.86	16.29	North Adelaide	4.18	22.80	17.78	22.37
Crystal Brook	2.37	17.69	12.69	15.95	Adelaide	3.48	19.23	17.29	21.08
Georgetown	3.16	19.02	14.93	18.55	Glenelg	3.17	18.22	15.34	18.45
Narridy	1.79	13.19	13.17	16.37	Brighton	3.80	17.89	17.87	21.87
Redhill	1.55	12.71	13.99	16.94	Mitcham	4.61	21.39	20.23	24.26
					Glen Osmond	4.47	23.43	21.66	25.94
					Magill	4.37	24.91	20.06	25.35

RAINFALL—continued.

Station.	For Sept., 1924.	To end Sept., 1924.	A'v'ge To end Sept.	A'v'ge Annual Rainfall
MOUNT LOFTY RANGES.				
Teatree Gully.....	4.42	24.79	23.19	27.77
Stirling West.....	7.97	39.42	37.77	46.82
Uraidla.....	6.04	37.19	37.64	44.23
Clarendon.....	4.30	24.00	28.57	33.09
Morphett Vale.....	3.28	19.30	18.99	22.90
Noarlunga.....	3.42	18.42	17.11	20.41
Willunga.....	3.92	22.27	21.72	25.99
Aldinga.....	2.60	17.05	17.15	20.44
Myponga.....	4.79	23.79	25.44	29.80
Normanville.....	3.13	19.03	17.48	30.70
Yankalilla.....	3.19	19.09	19.95	23.31
Mount Pleasant.....	3.81	19.56	22.85	27.28
Birdwood.....	4.81	21.25	24.62	29.39
Gumeracha.....	5.88	27.74	27.82	33.36
Millbrook Reservoir	5.66	29.96	31.70	36.21
Tweedvale.....	6.30	30.75	30.15	35.65
Woodside.....	6.07	27.96	26.58	32.20
Ambleside.....	6.00	28.99	29.17	34.82
Nairne.....	4.01	21.90	23.96	28.44
Mount Barker.....	4.94	24.60	24.02	31.30
Echunga.....	5.35	26.55	27.72	33.06
Macclesfield.....	4.58	22.53	26.48	30.65
Meadows.....	5.45	30.72	30.18	36.19
Strathalbyn.....	3.05	15.87	15.78	19.37

MURRAY FLATS AND VALLEY.

Meningie.....	2.63	16.74	15.68	18.74
Milang.....	1.53	10.64	12.53	15.45
Langhorne's Creek	1.77	12.33	11.80	14.77
Wellington.....	2.05	13.04	11.49	14.80
Tailm Bend.....	1.98	13.67	11.78	14.68
Murray Bridge.....	2.33	11.61	11.05	13.94
Callington.....	2.27	11.72	12.56	15.49
Mannum.....	1.93	9.14	9.27	11.66
Palmer.....	2.49	9.64	12.53	15.46
Sedan.....	2.31	9.56	9.92	12.27
Swan Reach.....	2.02	8.37	8.59	11.06
Blanchetown.....	0.96	5.97	7.74	10.09
Eudunda.....	3.14	11.70	13.93	17.51
Sutherlands.....	1.73	7.36	8.80	11.20
Morgan.....	1.81	6.74	6.93	9.30
Walkerie.....	1.71	7.40	7.63	9.87
Overland Corner.....	1.39	5.59	8.29	11.03
Loxton.....	1.83	7.94	9.89	12.50
Renmark.....	1.79	6.53	8.26	11.06
Monash.....	—	—	—	—

WEST OF SPENCER'S GULF.

Eucala.....	2.54	5.63	8.08	10.01
White Well.....	0.66	5.16	7.09	9.20
Fowler's Bay.....	0.93	6.47	10.40	12.14
Penong.....	0.94	9.96	10.73	12.53
Ceduna.....	0.95	6.85	7.32	10.25
Smoky Bay.....	0.93	7.17	10.33	10.98
Petina.....	1.61	8.45	10.86	12.95
Streaky Bay.....	1.75	9.23	12.69	15.11†
Talia.....	1.02	10.02	13.10	15.32
Port Elliston.....	1.68	11.40	14.23	16.56
Cummins.....	1.81	9.88	17.33	18.56
Port Lincoln.....	1.89	11.13	15.66	19.69

WEST OF SPENCER'S GULF—continued.

Tumby.....	1.52	8.27	11.74	14.56
Carrow.....	1.49	6.67	11.36	14.42
Arno Bay.....	1.07	7.33	10.51	13.06
Cowell.....	0.91	5.41	9.24	11.63
Minnipa.....	1.38	8.51	12.96	15.51
Ungarra.....	2.09	10.43	—	—
Darke's Peak.....	1.27	10.02	—	—
Kimba.....	1.49	9.59	—	—

YORKE PENINSULA.

Wallaroo.....	1.69	11.75	11.71	14.15
Kadina.....	1.69	12.72	13.35	16.02
Moonta.....	1.33	12.92	12.73	15.35
Green's Plains.....	1.87	12.26	13.19	15.86
Maitland.....	2.17	18.01	17.85	20.17
Aldrossan.....	1.49	10.10	11.69	14.18
Port Victoria.....	1.83	13.79	12.92	15.50
Currumulka.....	2.17	13.88	15.13	18.20
Minlaton.....	2.19	14.29	15.05	17.90
Brentwood.....	2.07	12.66	13.09	15.83
Stansbury.....	2.76	14.17	14.26	17.01
Warooka.....	2.16	12.74	15.23	17.86
Yorke town.....	1.98	12.05	14.54	17.24
Edithburgh.....	2.58	11.51	14.97	16.58

SOUTH AND SOUTH-EAST.

Cape Borda.....	3.19	18.29	21.91	25.08
Kingscote.....	3.33	12.96	16.14	19.04
Penneshaw.....	2.51	13.40	15.93	19.47
Victor Harbor.....	3.00	14.87	17.77	21.49
Port Elliot.....	2.95	15.10	16.64	20.12
Goolwa.....	2.61	13.04	14.67	17.89
Mindarie.....	2.25	10.96	—	—
Alawoona.....	1.64	9.04	—	—
Karoonda.....	2.40	12.28	—	—
Sandalwood.....	2.28	11.04	—	—
Meribah.....	1.89	9.30	—	—
Pinnaroo.....	2.14	11.92	12.45	15.59
Parilla.....	2.18	11.75	11.73	14.51
Lameroo.....	2.87	16.86	12.92	16.32
Parrakie.....	2.11	11.89	11.62	14.58
Geranium.....	2.48	13.88	13.34	16.62
Peake.....	2.18	15.61	13.46	16.73
Cooke's Plains.....	2.29	15.80	12.19	15.14
Coomandook.....	3.12	16.65	14.08	17.49
Coonalpyn.....	3.01	17.60	13.98	17.40
Tintinnara.....	2.58	15.23	15.00	18.79
Keith.....	2.73	14.65	14.68	18.22
Bordertown.....	2.46	15.14	15.34	19.39
Wolsley.....	2.83	15.53	14.45	18.12
Frances.....	3.79	17.25	15.61	19.73
Naracoorte.....	3.13	18.33	18.10	22.25
Penola.....	2.81	18.73	21.11	26.26
Lucindale.....	2.88	20.12	19.90	23.00
Kingston.....	3.14	20.63	20.44	24.51
Robe.....	2.75	17.80	20.93	24.69
Beachport.....	3.26	18.18	23.09	27.29
Millicent.....	4.60	25.44	24.69	29.39
Kalangadoo.....	3.71	25.47	26.63	32.47
Mount Gambier.....	3.26	20.60	25.17	31.29

† In the January, February, March, April, May, June, July, August, and September, 1924, issues of the Journal this figure was shown as 18.07. It should read 15.11.

AGRICULTURAL BUREAU REPORTS.

INDEX TO CURRENT ISSUE AND DATES OF MEETINGS.

Branch.	Report on Page	Dates of Meetings		Branch.	Report on Page	Dates of Meetings	
		Oct.	Nov.			Oct.	Nov.
Alawoona	•	—	—	Geranium	•	25	29
Aldinga	•	16	12	Gladstone	283	10	7
Allandale East	†	10	14	Glencoe	•	16	13
Amyton	†	13	10	Glossop	•	8	5
Angaston	•	—	—	Goode	•	16	12
Appila-Yarrowie	•	—	—	Green Patch	295	13	10
Arthurton	•	—	—	Gulnare	288	8	5
Ashbourne	•	—	—	Gumeracha	•	13	10
Balaklava	•	11	8	Halidon	296	14	8
Balhannah	†	—	—	Hartley	•	—	—
Barmera	298	13	10	Hawker	•	14	11
Beetaloo Valley	283	—	—	Hilltown	•	—	—
Belalie North	•	11	8	Hookina	•	9	6
Berri	•	16	12	Inman Valley	•	—	—
Bethel	•	—	—	Ironbank	301	10	7
Big Swamp	290	—	—	Kadina	•	—	—
Blackheath	301	10	7	Kalangadoo (Women's)	302	11	8
Black Springs	†	7	11	Kalangadoo	†	11	8
Blackwood	•	20	17	Kangarilla	†	—	—
Block E	298	—	—	Kanmantoo	•	11	8
Blyth	†	4	1	Karoonda	299	16	12
Booleroo Centre	•	10	7	Keith	•	—	—
Borrika	•	—	—	Ki Ki	•	—	—
Brentwood	†	9	6	Kilkerran	289	7	6
Brinkley	296	11	8	Kimba	•	—	—
Brinkworth	288	—	10	Kingston-on-Murray	•	—	—
Bundaleer Springs	•	—	—	Kongorong	302	20	17
Bute	•	9	6	Koonibba	•	9	6
Butler	•	—	—	Koppio	•	13	10
Calca	•	—	—	Kringin	†	11	8
Cadell	•	—	—	Kybybolite	303	9	11
Canowie Belt	•	—	—	Lake Wangary	•	11	8
Carrow	•	8	6	Lameroo	296	11	18
Charra	290	8	5	Laura	†	11	8
Cherry Gardens	301	7	11	Lenswood and Forest Range	•	—	—
Clanfield	•	—	—	Light's Pass	†	9	13
Clare	•	—	—	Lipson	•	11	8
Clarendon	•	—	—	Lone Gum and Monash	•	8	5
Claypan Bore	†	15	12	Lone Pine	†	—	—
Cleve	•	8	5	Longwood	302	—	8
Collie	•	—	—	Loxton	•	—	—
Colton	•	—	1	Lucindale	•	—	—
Coomandook	•	8	5	Lyndoch	288	9	6
Coomalpyne	•	10	14	McLachlan	•	—	13
Cradock	•	—	—	McLaren Flat	†	—	—
Crystal Brook	•	11	8	MacGillivray	•	7	11
Cungena	•	—	—	Maitland	•	9	6
Currency Creek	•	10	14	Mallala	•	20	17
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Darke's Peak	•	16	12	Mangalo	•	—	—
Denial Bay	•	—	—	Mannanarie	283	9	6
Edillilie	•	25	29	Marama	•	—	—
Elbow Hill	•	14	11	Meadows	•	15	12
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Frances	•	25	29	Miltalie	†	11	8
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Narrung	•	11	8	Uraidla & Summertown	†	6	3
Neeta	•	—	—	Veitch	•	—	—
Nelahaby	283	11	8	Virginia	•	—	—
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* No report received during the month of September.

† Formal.

‡ Held over until next month.

A.M. Annual Meeting.

REPORTS OF BUREAU MEETINGS.**UPPER-NORTH DISTRICT.****(PETERBOROUGH AND NORTHWARD.)**

MORCHARD (Average annual rainfall, 13.50in.).

August 9th.—Present: 13 members.

MAINTENANCE OF ROADS.—A paper dealing with this subject was read from the *Journal of Agriculture*, and in the discussion that followed Mr. H. G. Kupke said farmers could improve the roads around the homestead if they drained the water off the low places. Mr. E. J. Kitto said sufficiently large metal was not placed in the foundations of present-day roads. The roads were made of light material, and they very soon collapsed.

WILLOWIE, August 14th.—A paper, "Stimulating Production," was read by Mr. W. Bull, and a lengthy and instructive discussion followed.

MIDDLE-NORTH DISTRICT.**(PETERBOROUGH TO FARRELL'S FLAT.)**

MOUNT BRYAN (Average annual rainfall, 15.83in.).

August 9th.—Present: 12 members.

CARE AND TYPE OF HORSE FOR FARM WORK.—In the course of a paper dealing with this subject, Mr. G. Goodridge said the horse was one of the main servants on the farm, and the farmer should give great care to the animals, because the horse could not be expected to do good work if proper care and attention were neglected. The following points should be carefully considered by every teamster. "Good feed in sufficient quantities and at regular hours, and provision made for an ample water supply. The trough should be some distance from the stable, so that the refuse from the stable would not be blown into the water. Regular hours of working were necessary. The team should be worked early in the forenoon, and not too late in the evening, because horses worked after sunset became very leg weary, and were apt to contract scalded shoulders. Good clean mangers and stables and good fitting collars kept in good repair should be provided. A horse that was subject to sore shoulders should have great attention paid to the collar in which it worked. The draught should be altered to try and ease the shoulders. If the shoulder could not be cured with a collar, a good idea was to try a saddle breeching for a breast plate. The best type of farm horse was the Clydesdale. The draught horse on the farm was always an asset, of which there was proof in the fact that good draughts always demanded good prices in a sale ring. The great difficulty the farmer had to face was the absence of a good, sound, well-bred stallion. The breeding of draught horses should be encouraged, because in the near future there would be a shortage of young draught horses, due to the decline in foal raising during the last few years." The paper concluded with an interesting description of the Clydesdale horse.

BEETALOO VALLEY, August 12th.—Mr. A. Bartrum read a paper, "The Future of Farming," which aroused an instructive discussion.

GLADSTONE, August 15th.—Mr. C. H. Lines gave an interesting and instructive report of the 1924 Winter School for Farmers, recently held at Roseworthy Agricultural College.

MANNANARIE, August 14th.—Mr. Baynes gave a short address, "Pig Raising," and a keen discussion followed. Several subjects of local interest were also brought before the meeting.

NELSHABY, May 17th.—The Hon. Secretary (Mr. A. M. Laurie) read a paper, "Planting Fruit Trees and Vines," and an interesting discussion followed.

REDHILL, August 19th.—Mr. W. Hancox read an interesting paper, in which he compared agricultural operations of England with those of Australia.

TARCOWIE, August 12th.—The Wool Instructor of the School of Mines (Mr. A. H. Codrington) delivered an address, "The Wool Industry," to a gathering of 17 members and visitors.

WIRABARA, August 9th.—Twelve members attended the August meeting, when several subjects of local and timely interest were brought forward, and a keen discussion ensued.

LOWER-NORTH DISTRICT.

ADELAIDE TO FARRELL'S FLAT.)

SADDLEWORTH (Average annual rainfall, 19.69in.).

August 15th.—Present: 12 members.

THE FARMERS' WOOL CLIP.—The following paper was read by Mr. F. W. Coleman:—"The main object in classing wool is to obtain as few different sorts as possible, at the same time keeping each lot as even as possible. With a small flock only a few lines should be made, because big buyers will not trouble about very small lots of a bale or two. If a flock contains different breeds of sheep, such as Merinos and crossbreds, each breed must be kept separate throughout the whole clip, and the easiest way to do this is to draft before shearing. Sometimes hoggets and wethers are kept separate from the ewes, but this is not necessary with a small flock if the flock is fairly uniform. If, however, the ewes are old and finer woolled, they should be kept apart. Lambs' wool has to be kept separate, but these need not be drafted before shearing; the easier way is to shear the old sheep in the pen and then finish off with the lambs, keeping the wool separate. All sheep, if dirty, should be dagged in the yard before bringing them into the shearing shed, otherwise dirt and wet wool will soil a lot of good wool when the sheep are being shorn. Dags and dirty pieces of wool should be dried and later put in with the locks. A wool table made of slats or broomsticks should be provided to allow small pieces to fall through. Fleeces should be thrown on the table with the outside of the fleece upwards. The fleece should then be skirted according to the condition of the whole fleece. If fleeces are fairly free from burr and dirt a good skirting should be made, taking off all burry edges, dirty pieces, strong wool from the breech and neck, and patches from the top of the neck and head if it contains sticks, &c. If, however, the fleece is fairly burry all over, heavy skirtings would not be of much advantage, and only very dirty and extra thick patches of burr should be removed. The fleece should then be rolled so that the back is rolled into the middle with the shoulders on the outside, in order that the best part of the wool is exposed. Fleeces should be all put in one line, unless there is a noted variation in the kinds of fleeces. If desiring to make two classes, all the heaviest and greasiest fleeces should be placed in one class and the lightest in the other. Crossbred fleeces should be classed on quality. Any fleeces that differ to a large extent from the main lines should be put in an odd lot or torn up and put into the pieces. Bellies should be put in one lot, the centre stain taken from the wethers, and any other stains removed, and put into the locks. Any poor bellies should also be taken out and put with the locks. Pieces should be put on the table and picked over, and any stained, dirty, extra heavy, or inferior wool taken out and put into the locks. Locks—Put any wet wool out to dry before packing; do not throw away dirty wool, it is all worth something. All sweepings, crutchings, &c., should be put in with the locks. Lambs' wool should be put on a table that has previously been covered with sacking, and picked over, making two classes—lambs' wool and lambs' pieces, all the longest and best looking wool being classed as lambs'. Rams' wool should be packed separately. The bellies and pieces of the rams' fleece may be put in with pieces, but fleece wool should be kept separate. Black wool should also be kept separate. Packing Wool—A good wool press should be provided, and fleeces put in tidily and evenly in rolls. Do not tie fleeces with string, and keep all foreign matter out of the bale. The wool shed and yards

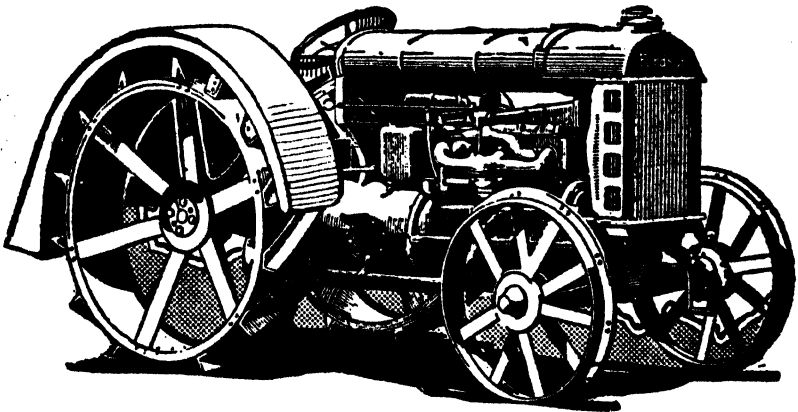
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should be kept clean, because dust in the wool will greatly reduce the price. Bales should be well packed and pressed, in order to make a tidy square bale that will not be loose when handled. A tightly packed bale also has a good appearance, and may save a bale. In order to get a good price and interest buyers in the clip, the wool must have an attractive appearance. Use colored sewing twine if possible, to prevent the twine mixing with the wool, and use the lock stitch for sewing; it is neater and safer. Brand in large clean letters and numbers on the side and end of the bale. Stencils are the best means of branding the bales, marking them with the name or brand of the clip on top, then a short description of the wool and the number of bale. When as many full bales have been made as is possible do not put the remainder in a mixed bale or make half bales. Put the wool in bran or wheat bags, see that they are clean, and brand each bag the same as a bale. Bag lots will be reclassified on arrival at the store, and be put into classes with other lots, and will often bring a higher price than a bale lot."

SPALDING (Average annual rainfall, 20.25in.).

August 15th.—Present: 12 members.

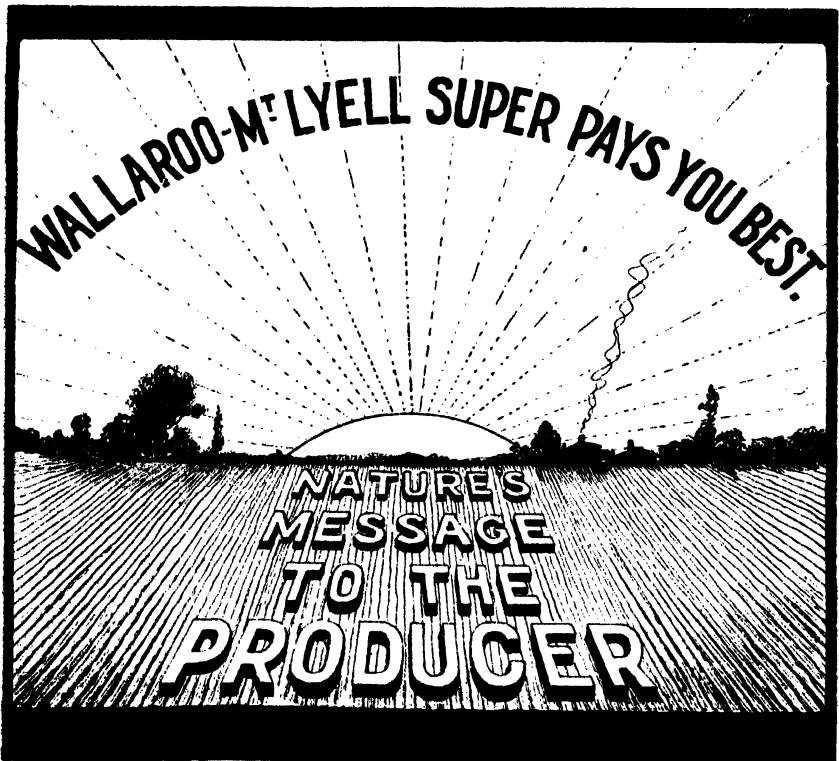
FODDERS.—Mr. S. Trengove read the following paper:—"The need for storing large supplies of foodstuffs in times of plenty is frequently brought home to many farmers, dairymen, and stockowners. Many farmers said in 1914 that they would not be caught again in a dry year without at least two years' supply of fodder on hand, and August, 1915 and 1916, found farmers building huge stacks of good, clean wheaten hay, only to have them destroyed by mice. This fact taught many farmers the wisdom of erecting large hay sheds and making them mouseproof. This is certainly a good plan, and one that must return a handsome rate of interest to those who can afford to lay out the capital. For the farmer to grow oats and store them in a mouseproof shed, or in very large iron tanks, and feed them when required to stock, is certainly a good method to overcome the difficulty, because it is possible to store a lot of valuable food in a small and inexpensive place. Top-dressing of lands with a liberal supply of manure will double the stock-carrying capacity of local pasture lands. Where the country is suitable, the growing of lucerne will relieve the shortage, but this method is certainly not a cheap one. I am now putting some land under lucerne, and the following is the table of expenses:—Deep ploughing, 12s. 6d. per acre; harrowing, drilling, and harrowing behind drill, approximately 7s. 6d. per acre, making £1 per acre for working down land and sowing lucerne seed; lewt. of manure, 6s. per acre; and 10lbs. to 12½lbs. of seed at 2s. 9d. per lb., 27s. 6d. to 33s. per acre; total cost working land, £1; manure, 6s.; seed, approximately, 30s., making a cost of £2 16s. per acre. When well established the lucerne should produce several cuts in one year, if the plants are not fed off by stock. The crop must be cut when ready, otherwise the effect of delay will be similar to a farmer allowing a heavy crop of wheat to stand when ripe. Should the lucerne grower be a wheat farmer, and the two crops be ready to gather at the same time, the wheat crop would naturally be handled first. To press or bale lucerne it is necessary to provide a machine which costs nearly £400, and four men are required to cut, gather, and bale the crop. Pressed lucerne should be stored in a large iron-covered shed, otherwise much damage will be caused by heavy winter rains. The storing of supplies of ensilage in silos is one form of conserving fodder that is deserving of more consideration at the hands of stock owners. It cannot be said that a farmer is carrying on his business on sound lines if he tries to overcome drought conditions by only carrying 50 per cent. of the total stock-carrying capacity of the farm. Again, to carry £1,000 to £10,000 worth of stock on one's property and have no supplies of food stored up is certainly not sound management. The main reason why stock owners do not store a large supply of foodstuffs is that they cannot well afford to have so much money locked up in hay, haysheds, &c., as is called for by the proper storage of fodder. Should a farmer cut the whole of the wheat crop and make hay of the same, estimating returns at 500 tons of hay, valued when stacked at £4 per ton, a total value of £2,000, and if the farmer should then go to his banker and ask for an advance on the hay which has been put by for a dry time,

I am sure there is not a banker in South Australia who would advance a £5 note on the same. Notwithstanding that, he is a foolish man who does not lay up supplies in prosperous times for dry seasons that recur every few years in South Australia." In the discussion that followed, members vigorously attacked the suggestion of the writer that 500 tons of hay should be cut and stacked. Their contention was that there were few farmers who could afford to cut so much in one year. Mr. A. Stephenson favored cutting straw, and making a substantial stack, which would keep for a number of years without any fear of being riddled by mice; also by storing oats in concrete or iron tanks. Mr. C. Sieghert considered it foolish to cut all wheat for hay in one year, but thought it advisable to cut an area each year, and place it in miceproof stacks for dry seasons. He thought hay sheds were valuable, but considered that there were only very few farmers who erected them. In discussing the growing of lucerne, the writer of the paper considered there was plenty of land in the Spalding district that would grow it abundantly, and as a fodder it was not to be excelled, either fed, grazed, or stacked. Mr. S. Trengrove said the stacks should be covered with straw.

WIRRILLA.

July 12th.—Present: seven members.

TO INCREASE THE CARRYING CAPACITY OF THE LAND.—In the course of an address dealing with this subject, Mr. L. S. Moore advocated fallowing about one-quarter of the area of the farm, say 150 acres; on which wheat could be sown, with at least 1½ wts. of 45 per cent. super. The following year about 80 acres



of the wheat stubble could be sown with oats and barley, with 1½ cwt. super. The following year the paddock could be grazed and again fallowed, thus making a four-year rotation. By that system more sheep could be kept on the farm and the land would become more fertile. He would grow lucerne for feed for cows, and greenfeed for pigs, and would keep a number of fowls. To make sure of being able to carry stock over periods of shortage, he advised the conservation of hay and oats, so that hand-feeding could be resorted to, if necessary.

A further meeting was held on August 9th, when Mr. H. Thomas gave a demonstration and an address, "Wool Classing."

BRINKWORTH, August 11th.—Mr. S. R. Cockburn delivered an address "Topdressing of Pasture Lands," to a gathering of 28 members and 11 visitors.

FARRELL'S FLAT, August 15th.—The Hon. Secretary (Mr. S. Elliott) read extracts dealing with the subject, "Topdressing of Pastures," and a keen discussion followed.

GULNARE, August 13th.—Mr. L. Smart delivered an address in which he recounted his experiences at the Winter School for Farmers at the Roseworthy Agricultural College.

LYNDOCH, August 14th.—The Hon. Secretary (Mr. J. S. Hammatt) read a paper, "Impressions of the Western Darling District of New South Wales."

OWEN, August 15th.—The Chairman of the Advisory Board of Agriculture (Mr. W. S. Kelly) addressed a meeting of the Owen, Alma, and Balaklava Branches on the subject "Crop Competitions."

ROSEDALE, August 11th.—Ten members attended the August meeting, when a short paper, "Why Cannot Wheat be Grown as Profitably as Hay," was read by Mr. G. C. Heinjus.

STOCKPORT, August 15th.—Messrs. R. Whitelaw and C. Murray gave reports of the tractor trial at Whyte-Yarcowie, and an instructive discussion ensued.

TARLEE, August 26th.—Fourteen members and five visitors attended the meeting, when the Chairman of the Advisory Board of Agriculture (Mr. W. S. Kelly) delivered an address, "Relative Value of Foodstuffs."

WATERVALE, August 11th.—The meeting discussed the subject "Spraying Vines." The Hon. Secretary (Mr. J. Grace) read the annual report, and the officers were elected for the ensuing year.

WILLIAMSTOWN, August 15th.—Twenty members attended the meeting, when Mr. R. C. Scott (Experimentalist at the Roseworthy Agricultural College) delivered an address, "Phosphatic Manures."

YORKE PENINSULA DISTRICT.

(TO BUTE.)

MOONTA (Average annual rainfall, 15.22in.).

August 16th.—Present: 12 members.

HOUSING POULTRY.—In the course of a paper dealing with this subject, Mr. A. Marsland said poultry was sadly neglected on some farms, and no provision was made for housing the birds. The front of the fowlhouse should face the north-east. A house 40ft. long x 18ft. deep and 8ft. high in front, sloping towards the back to a height of 6ft. 6in., with a sheet of iron along the front to break the wind, and the rest of the front enclosed with wire netting and a conveniently situated door, would hold 250 laying hens. The shed could be erected for about £25. A wire-netting yard could also be added, and would protect the birds from foxes. The fowls could easily be trained to go into the house if they were locked up for a day or two, and the birds shut up until they had been fed in the mornings. The mash should consist of one part bran, one part pollard, and one part chaffed greenfeed. If lucerne was not available, fairly green chaffed hay, soaked overnight, could be used. Wheat should be fed in the evening. Good clean water should be placed in earthenware vessels so that a little blue-

stone could be added to keep the birds healthy. To keep the house clean, he suggested that all perches should be placed some distance away from the walls. Old $\frac{1}{2}$ in. water pipes about 4ft. long driven into the ground, with a 3in. x 1in. batten or a mallee rail, with a $\frac{1}{2}$ in. bolt through the perch into the pipe, made serviceable perches, and they were also easily taken off to paint with kerosine now and again, to keep mites and tick under control. The farmer that could not afford to build such a house could secure a few mallee posts and rails, and make a shed with a straw roof and broom bush sides. Although it might be necessary to rebuild the shed every year because of vermin, the fowls would be protected from foxes. In the discussion that followed, Mr. H. Goldsworthy said he had built houses for his fowls, and found it a very payable proposition. Poultry were a good side line on the farm. Mr. Geo. Page said that when poultry were allowed to run at large they were able to find nearly all their own living, but he agreed that good housing was advisable. Mr. E. Atkinson said that whilst he had good houses for his poultry, the fowls rarely went in them; they preferred to roost in the open air. Where foxes were prevalent housing was essential. Mr. D. Kitto said fowls should be protected from extremely cold weather if the best results were to be obtained. Housing was an important item, but feeding at regular hours, and with correct foods, was also most important.

KILKERRAN.

August 12.—Present—eight members.

WORKING FALLOW.—Mr. B. J. Gregory, who read a paper dealing with this subject said so long as the fallow was moderately clean, the spring-tooth cultivator was the best implement for working the land. It was lighter in draught than any other cultivator, and could be run over the fallow in less time than other implements. If possible, the fallow should be worked after every rain to bring the ground to as fine a tilth as possible. The spring-tooth improved the seed bed,

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and the ground did not set down so hard as when worked with other implements. Should weeds and rubbish get out of control, the twin plough was the best implement to use. In sandy soil the ridges made by the spring-tooth helped to prevent the soil from drifting. He advised the purchase of a combined drill and cultivator, because that implement could be used for seeding and also for cultivating during the whole of the year. An interesting discussion followed.

PASKEVILLE (Average annual rainfall, 16.10in.).

August 13th.—Present: 12 members.

THE TRACTOR.—The following paper was read by Mr. C. Bussenchutt:—"I have worked a tractor constantly for two years, and can safely say that it does not require half as much attention as a team of horses whilst working, and it is no trouble or expense whilst it is idle. Working Expenses.—Last year I ploughed 40 acres with a five-furrow plough, using 44galls. of kerosine and 5s. worth of oil—£3 10s., or 1s. 9d. per acre. For cultivating, the tractor requires about 1gall. of kerosine for every 2½ acres, or about 9d. per acre. This season I drilled and harrowed 40 acres, and cut chaff for about 30 horses and cattle on 20 cases of kerosine, one case of lubricating oil, and 1gall. of petrol for starting purposes, a total cost of 8d. or 9d. per acre for drilling and harvesting. The chief advantages of the tractor over horses are—three to four more hours' work can be gained daily, more work in the same time, no shifting of swings, chains, &c., it does not require one-quarter as much attention as horses, does not eat whilst it is not working, and will not break down fences. If a tractor is given reasonable care it will work and last as long as the average horse, and with no more expense. Again, the man with a tractor can crop more land instead of leaving it for feed for horses. During the present season it was necessary to shift the swings on to one plough, and whilst the man was shifting the swings and harnessing the team I ploughed six rounds of a 40-acre piece, including shifting the tractor. I do, however, admit that the horse has an advantage when working under muddy conditions." In the discussion that followed, the general opinion was expressed that where a farm warranted two teams to work it, a tractor could very well take the place of one of them. It would not be advisable for a farmer to dispense with the horses altogether, for it was felt that these were necessary when the land was wet, when the work could be done more satisfactorily with horses.

WEAVERS, August 18th.—Mr. Jas. Sheriff read a paper, in which he enumerated the many pests which the farmer had to fight in the course of his cereal growing and livestock operations.

WESTERN DISTRICT.

BIG SWAMP.

August 14th.—Present: eight members.

CO-OPERATION.—In introducing a discussion on this subject, the Hon. Secretary (Mr. J. Winch) drew comparisons between conditions prevailing in Australia and those of other parts of the world. Mr. E. Chapman mentioned the need for a co-operative machine shearing shed at Coomunga. Mr. W. Sims stated that a six-stand plant would cost about £1,300. Members generally considered the price to be reasonable, and that the scheme should be launched in the near future, because the number of sheep in the district was increasing, whilst shearers were decreasing, because of late years comparatively few young men had learned shearing.

CHARRA.

August 13th.—Present: nine members.

MARKETING WHEAT.—Mr. E. O. Dahl read the following paper:—"The fame of Australian white wheat is world wide. European millers use Australian wheat as a blend to make flour from South American and other wheats, and a higher compliment could scarcely be paid to Australian white wheat. Wheat should be

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sold by grades. The conscientious farmer who tries to grow a good clean sample of wheat, true to name, and free from all foreign matter, should be encouraged by receiving 4d. per bushel more than the farmer who markets inferior and dirty wheat. This would bring about the much desired buying of wheats by grades. It is disheartening to the careful farmer when he knows that the careless grower will receive the same price for his second or third grade wheat. Millers and merchants do not want rubbish, and all the poor grade wheat must be re-cleaned in the mills, which means a waste of time and money. I have seen wheat which, if re-cleaned, would yield 300 bush. out of every 3,000 bush. so treated. All this means space in ships and extra freights paid on wheat that could well stay on the farm or, better still, not be grown at all. Payment by quality will be a step in the right direction, because it will mean the introduction of better farming methods. Careless seeding operations will not pay. All lands should be carefully cleaned of rubbish with a fire rake and sheep, and a good clean area of fallow should be sown each year, otherwise a heavy penalty over the scales must be expected. Now that the railway is established a lot of time formerly spent on the roads in hauling grain to the seaboard can be spent to advantage on the farm in cleaning the ground for seeding. If every farmer does this there will be no cause to complain about rubbish, &c., and no penalty need ever be imposed over the scales." In the discussion that followed, Mr. W. Tudor considered that the Charra district was more suitable for sheep than wheat. Mr. F. B. Haseldine said wheat growing was a better proposition than sheep raising, provided the land was given fair treatment and a liberal dressing of super. Mr. E. Denton favored selling wheat by grades. Australia had to compete with the world's markets, so that it was necessary to build up a good clean market to be able to compete successfully. Selling by grades, he thought, would not be of any great advantage unless bulk handling was adopted.

MALTEE.

August 15th.—Present: 13 members and three visitors.

FALLOWING.—Mr. H. Leustner, who read a paper dealing with this subject, said before the commencement of fallowing all harness and implements used in connection with the work should be carefully overhauled. He recommended a five-furrow or six-furrow share plough. The soil should be ploughed to a depth of about 1½ in. to 2 in. Fallowing should be commenced early in the month of June and carried on until August, but on no account should it be continued later than the first week in September. After a rain it was advisable to run heavy harrows over the land in order to bury weeds and break clods, which would always be found when ploughing hard soil. It was a mistake to use harrows if the soil was wet, because the teeth collected weeds and dragged them over the ploughing. To keep fallow clean and to preserve moisture it was necessary to cultivate to the depth of 1½ in. Cultivation should be done twice before harvest and as soon as possible after a rain. During February the land should be again worked, in order to check the growth of buck bush, mustard, and other weeds. It was also necessary to work the cultivator at a shallow depth before the drill, because the land in this district did not have a firm subsoil, and therefore could not be disturbed deeply. The cultivator should be used in preference to a skim plough, because back ploughing did not loosen the land enough to allow the air to penetrate the soil.

ROBERTS AND VERRAN.

August 14th.—Present: 12 members.

MIXED FARMING.—Mr. H. Simmons, who read a short paper dealing with this subject, said to carry on mixed farming on new land it was necessary to work the land on a system of rotation of crops. The first two or three crops should be wheat, followed by one or two crops of oats. On a farm of 1,000 to 1,200 acres it was advisable to run 200 or 300 sheep, because at the present price of wheat, wheat growing alone was not a payable proposition. With sheep and a few other side lines such as cows, pigs, and poultry, farming could be made a

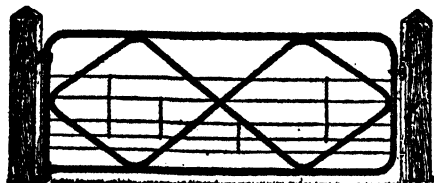
profitable undertaking. Sheep were the best paying proposition to the farmers of that district, because not only did the man on the land get a return for the wool, but he could also dispose of fat lambs to the freezing works at Port Lincoln. In addition to that, meat was always available for household purposes, and sheep were of great assistance in keeping weeds under control. Only a sufficient number of cows should be kept to supply the house with milk and butter. Pigs, of late years, had not been a profitable side line, but with the opening of the freezers they should, in the future, prove an additional source of revenue. Fowls were a valuable side line in supplying the house in eggs, and meat for table purposes. The farmer of to-day had to derive some source of income other than that obtained from wheat growing, because with the present high price of machinery and because crops in their districts were subject to take-all, side lines were necessary. In the discussion that followed, Mr. H. Smith said two crops of wheat, followed by a crop of oats, was the best system of farming new land. The land should then be left for grazing or else fallowed. He favored sheep as a side line. Mr. M. Masters said that if the suggestions of the paper were put into practice farming would be a more payable proposition. Sheep were a valuable side line, but wheat growing alone was not profitable. A farmer should endeavor to fallow a third of the area of the farm, and sow half with wheat and half with oats in rotation, and burn the stubbles as often as possible. He favored growing oats for greenfeed. Mr. D. Jonas agreed that wheat growing alone did not pay. He favored growing oats and running sheep. Poultry paid well. He thought pigs would be a profitable line in the near future. Mr. G. Smith said cropping operations alone did not pay, and grazing had to be carried on as well. He considered sheep and poultry the best paying side lines. He favored growing more oats than wheat. For early greenfeed he favored barley. Mr. A. Cowley agreed that mixed farming was necessary. The various lines should be run in proportion. Wheat should be the main crop, but to grow wheat successfully it was necessary to grow oats, and stock should be carried to dispose of the oats. Sheep were the most profitable stock, but cows and pigs were also profitable if handled properly. Poultry were also a valuable asset, and it sometimes paid better to feed wheat to fowls than to sell it. Care should be taken not to

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overstock. Mr. H. Lewis favored running sheep in conjunction with wheat growing. Cows were not profitable except when feed was plentiful. Mr. A. Smith favored growing oats for hay and grain. Sheep were a valuable side line. Mr. B. Evans favored stock raising in conjunction with wheat growing. He advised putting all the wheat stubble in with oats. Sheep were the most profitable line of stock. Mr. C. Masters agreed that sheep were the best paying side line, but cows and pigs were also a good source of revenue. He favored growing more oats than was usually the case. Plenty of hay should be cut in good years to carry on when feed was scarce.

YADNARIE (Average annual rainfall, 14.09in.).

August 13th.—Present: 17 members.

THE TANDEM TEAM.—Mr. W. Hoffman read the following paper:—"For working a large team the 'tandem' method is to be preferred to the 'abreast' system. The number of horses used for an average tandem team in this district is 10, of which five would be leaders. This fact may be considered the main drawback in the establishment of a tandem team, and it may also stand for the reason why some farmers do not work their horses tandem. Yet there are farmers in this district who have the necessary number of free workers that are required to form a tandem team, and still they work from eight to 12 horses abreast. The tandem team is far more superior in every respect, and on account of the perfect equalisation of work it greatly reduces the frequency of sore shoulders on horses. Another place where the tandem method proves of advantage is on implements that are subject to side draught, such as harvest machinery or disc ploughs. On these machines the tandem almost reduces the side draught to a straight pull, thereby saving the horses' energy and giving them a fair chance to prove their merits. The tandem team enables a 12-horse team to pass through gates five yards wide, and at that width substantially constructed gates can be erected. In the case of cultivating land, less horses will be working on the ploughed soil, and this in wet weather makes the walking a great deal easier for the animals. The tandem does away with cumbersome swings and heavy spreaders; it brings the slowest horses nearest to the teamster, so that they may be aroused and made to do their share of the work without disturbing the leaders. It must be remembered that spreader chains or bars must be of double strength, thus allowing six horses to pull on a three-horse spreader. If possible, the five pairs of body chains should be of equal length; although independent of these, the spreading chains should also be equally long. The equalisers are best made of steel 1½in. thick, from 2in. to 2½in. wide and 12ft. to 14ft. long. The holes for the centre hooks and the end links should be punched instead of drilled. It is advisable to make the equalisers with three links on one end and one link on the opposite end, so that a free horse can be given the advantages or the slow horse the disadvantage. It is just as essential to work back bands on the body horses as on the leaders, thereby relieving the body horse of the weight of the chains and equalisers, and the discomfort caused by wedging the neck into the top of the collar. In any case a piece of bran bag twice doubled should be placed under the collar. Spreaders must be placed in the leaders' chains, to prevent the equalisers from chafing the sides of the body horses, and it is also necessary to have belly bands for the leaders."

WIRRULLA.

July 23rd.—Present: 17 members and four visitors.

ERADICATION OF BUCK BUSH.—Mr. C. L. Campbell read a paper on this subject, in the course of which he stated in dealing with green buck bush that was from 6in. to 9in. in diameter he suggested the use of a spring tyne cultivator with 6in. shares. After being rooted out of the land the bushes would soon become dry, and with the first strong wind would blow away or into heaps, when they could be burnt. If that treatment did not clear the field, the harrow could be worked, when they would pull out any of the bushes that had been missed. These could be dragged into heaps and burnt. To deal with fully grown buck bush he advised waiting for the first windy day, when the bushes could be "chained." The

length of chain required would depend on the number of horses one intended to use. Eight horses, four on each end of the chain, would work a chain 70yds. to 80yds. in length, and with that span two men could do from 50 acres to 70 acres an hour. The chain should be weighted down with logs every 4yds. or 5yds. When that plan was adopted it was preferable to work against the wind, so that the bushes would blow off the field. That method gave very good results on plain land, but on stumpy country there was too much loss of time. If the field was not sufficiently cleared the bushes could be harrowed into heaps and burnt, and once over with the harrows should be sufficient. Fully grown green buck bush with a second growth could be treated with the chain and then harrowed and burnt. The harrows should be detached from the bar for that work with 7ft. to 8ft. of wire attached to each harrow, from which the horses could pull. That would allow the harrows to carry more buck bush and throw it out in larger heaps, which would greatly facilitate burning. If the field had to be harrowed a second time he suggested driving the reverse way to pull up the bushes. Buck bush that had been left until after the first rains, and had become dry, could be treated with the chain, then harrowed and burnt. Seeing that the field would be treated fairly late in autumn, when the ground was more or less in a wet state, the heaps would have quite a lot of sand in them, which made burning very difficult, so that it would be necessary to throw out the heaps with a fork before they could be burnt properly. It was advisable to wait until the surface of the ground became dry, and then work the harrows, followed by a man with a fork, burning the heaps as they came out of the harrows.

GREEN PATCH, August 11th.—The meeting was devoted to discussing the subject "The Relative Value of Lime and Gypsum."

MOUNT HOPE, August 9th.—The meeting took the form of a "Question Box," when several matters of local and timely interest were brought before the meeting for discussion.

PETINA, August 11th.—Matters relating to the 1924 annual congress and the conference of Eyre Peninsula branches were brought forward and an interesting discussion followed.

PYGERY, August 26th.—The monthly meeting was held at Mr. E. B. Smith's homestead. Members and visitors inspected the farm buildings, crops, and stock. and during the evening an address, "Wheatgrowing in the Pygery District," was given by the manager of the Minnipa Experimental Farm (Mr. R. Hill).

YALLUNDA FLAT, August 23rd.—Mr. E. Butler delivered an address, "Do Pigs and Cows Pay as Side Lines on the Farm." An instructive discussion followed.

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EASTERN DISTRICT.

BRINKLEY.

August 9th.—Present: eight members.

HORSES AND HARNESS.—Mr. H. A. Borchardt, who read a paper dealing with this subject, said:—Working horses were the most important stock on the farm, and they should, therefore, receive the best attention. For feeding, he favored oaten chaff, but if the horses were doing very hard work and were showing signs of fatigue, linseed meal added to the chaff made a good feed. The team should be allowed an hour and a half for dinner, and they should never be worked more than eight or nine hours a day. Grooming was also an important point in the care of the team. The horses should be well and regularly groomed, and care should be taken to keep the shoulders thoroughly clean. If that were done, and well-fitting collars provided, little trouble would be experienced with sore shoulders. Another good preventive of shoulder trouble was the use of back bands. Since he had been using back bands on all horses doing swing work, the horses had not had any sore shoulders for over three years. For curing sore shoulders he advised a strong solution of warm water and boracic acid. If a horse had sore shoulders, and the farmer could not turn it out for a spell, he suggested that a piece of sheepskin should be obtained and sewn on to the inside of the collar, the wool against the collar, the other side being dressed with neatsfoot oil. He also recommended that a good supply of veterinary medicines should be kept on hand. Each set of harness should always be kept in a dry place and hung on pegs next to the horse on which it was used. Harness should be kept in good repair and thoroughly oiled with neatsfoot oil at least twice a year.

HALIDON.

July 16th.—Present: nine members and three visitors.

TRACTOR v. HORSES.—Mr. C. H. Russell, who read a paper dealing with this subject, said no branch of farming was receiving more thoughtful attention than that of the possibility of the tractor displacing horses. It was his opinion that power farming had come to stay, and the most serious obstacle to possessing a tractor was one of finance. Theoretically, the advantages in favor of mechanical power appeared to admit of no argument. In weather such as had recently been experienced, the tractor owner could still be in bed whilst the farmer without a tractor would be caring for his horses. After breakfast the tractor farmer was able to set the implements in motion in less time than it took to harness the team, and, if necessary, the tractor could be kept working all day. Ideal weather for seeding and harvesting operations was limited, and the crops had to be sown and taken off as rapidly as possible. It was in this weather that the tractor undoubtedly had an advantage over horse teams. Finally, feed that was consumed in the paddock by horses could be very profitably utilised for sheep. The initial cost of the tractor, despite the liberal terms offered by agents, made the farmer hesitate about the purchase of a machine. Secondly, the average farmer was not a mechanical genius, and unless one was thoroughly conversant with the modern internal combustion engine, much loss of time and money would follow. The third point, and one which he considered should give serious food for thought, was whether the tractor would give the years of efficient service such as farmers expected from their horses. For the Halidon district he was inclined to think that the "caterpillar" type of tractor would suit their conditions. Such tractors were comparatively light, weighing as they did less than 2 tons, and with a pressure to the square inch of track of only 4lbs. Such a tractor would do the work on the farm, and would not injure the roads if it was used for road haulage.

LAMEROO (Average annual rainfall, 16.55in.).

August 9th.—Present: 12 members.

THE FERTILITY OF THE FARM.—Mr. E. F. Davidson read a paper, "Building Up and Maintaining the Fertility of the Farm." "Every agriculturist has to contend with the problem of maintaining the fertility of his holding. What can

be done to make the white sandy soil of this district fertile? Chemical fertilisers are being used very freely, but the returns from superphosphate on white sand are not in any way payable. The crops need other fertilisers besides super, and the chief of these is organic manure. The more humus in the soil the greater will be the results from dressings of super. The wheatgrower is a robber of organic matter. He puts the harvester over the field, takes off all the crop, and the straw, which should replenish the soil of its humus, is burnt. There are several ways of putting humus back into the soil. Ploughing in the straw, ploughing in green crops, or by grazing stock. As farmers, we look askance at ploughing in straw, but we place too much value on the burn. We can plough in more straw if we pay more care to the consolidation of the seed bed after ploughing in the straw. The seeding of stubble and grass lands is the chief reason for placing so much value on the burn. A good method of maintaining a humus supply is to sow a green fodder crop and feed it to livestock. This will mean more stock and more paddocks, but it will not mean a less area for wheat, because on the sandy portions of the farms moisture is not the chief problem, but rather the problem of fertility. Organic matter added to light soils binds the sand particles together, and has the opposite effect on land that is inclined to run together. Decayed vegetable matter will hold more water than any type of soil, so that the more humus that can be added to the land the more water it will retain. This is an important factor, for the water-holding capacity of the soil is quite as important as the supply of plant food it contains. Apart from stock carrying and the humus acquired from so doing, the growing of fodder crops means that the plants are drawing on the soil at different depths or from different layers of soil. The question of cultivation also has to be considered. For, other conditions being favorable for good yields, the soil will give maximum returns according to the cultivation it has received. If farmers find out the essential elements that the land needs to make up and maintain fertility, and act accordingly, they will find that the soil will produce and yield all that is expected of it." In the discussion that followed, Mr. W. Morecom thought that humus could be added to the soil by ploughing in stubble, but thought that wheaten stubble might promote take-all. Mr. A. Burns thought the cheapest and best method of adding humus to the land was by ploughing in straw. Mr. C. R. Eime advocated having smaller paddocks and stocking heavily with sheep, because by so doing humus would be added by the droppings of the sheep.

MOOROOK.

August 15th.

Thirteen members attended the meeting, where a paper, "Spraying Fruit Trees," was read from the *Journal of Agriculture*. This was supplemented by extracts dealing with aphides and Rutherglen fly. The latter pest had appeared in one or two orchards in this district, and had done considerable damage to the apricot and peach crops during the ripening period. The fly can be destroyed by spraying with the following emulsion:—1 gall. water, 1 lb. soap, 1 gall. benzine. Dissolve the soap by boiling in water, then remove some distance from the fire, and add the benzine. Transfer forcibly from one bucket to another until it thickens to a cream-like substance. Members were of the opinion that the fly would not remain if orchards were kept free from weeds and rubbish.

NEW RESIDENCE (Average annual rainfall, 12.50 in.).

August 13th.—Present: 16 members.

TREATMENT OF FARM LABOR.—Mr. W. Fritsch, who read a paper dealing with the subject, said the farmer should provide for his employees a clean and well-ventilated room, a comfortable bed and mattress, and the door of the room should be fitted with a lock. Meals should be given at regular hours, and luncheon provided during the busy seasons of harvest and seeding. A farm hand should be called in the morning by his master, and the unpleasant work of the farm should be divided. If the employee had to work the team, the care of horses and harness should be imparted to him in considerate words. The machinery should

be explained, and the employee should be encouraged to repair broken parts of harness and implements. So far as wages were concerned, he preferred the share system, and a certain rate of pay per week. The employer should not withhold wages for any considerable time, and payments should not be delayed for longer than one month. The farmer should associate with and recognise the employee when elsewhere than on the farm. In regard to washing and ironing, he suggested that it should be done on the farm if possible, and the charge, if any, should be in comparison to wages. In the event of the employee wanting to visit the township, he should be provided with a horse or conveyance. The speaker also suggested that the farm hand should be allowed a Saturday afternoon off at least once a month, and he should also be free of all duties every alternate Sunday.

YOUNGHUSBAND.

August 14th.—Present: five members.

SHEEP ON THE FARM.—The following paper was read by the Hon. Secretary (Mr. H. W. Bates):—"A flock of sheep should be kept on almost every farm. Some farms are not suitable on account of the scanty nature of the soil, but the majority of farms have more or less land on which sheep can be profitably grazed. If the farm consists of all light sandy soil, sheep would be better left alone, because they very often cause the land to drift. The droppings improve the land, and sheep will eat almost any weed, and will completely eradicate the yellow daisy bush which is so common in this district. They are valuable for keeping fallow clean, and not only do they keep weeds from seeding, but they also compact the soil. Should the farmer intend keeping sheep, sheep-proof fencing will save a lot of trouble and worry. It will then be necessary to consider the breed, and this largely depends on the district. Here the Merino takes pride of place; they are quiet, and do not trouble the fences, the wool commands highest prices, and with careful management the flock should return a handsome profit to the farmer. The ewes should be systematically culled each year, only keeping the best, and with the chosen ewes rams of good breed and type should be mated. In order to obtain the best percentage of lambs the ewes should be running on good feed, not more than 40 ewes to each ram. If this is done, there is no reason why an 80 per cent. lambing should not be reached, providing foxes have been poisoned. During lambing time the flock should be inspected every morning in case the ewes need assistance. This is particularly the case if the ewes have been mated with some of the larger headed breeds, such as the Lincoln. When the ewes have finished lambing they should be kept on good feed, because a stunted lamb never makes a good sheep. At shearing time the sheep should be drafted into different lots, such as ewes, wethers, hoggets, and lambs, so that all the same classes of wool are together. Avoid the error of over-classing small clips, because this makes too many lots. If care and attention are paid to the flock there is no reason why it should not be the most profitable side line on the farm. With high prices ruling for wool, it will no doubt cause the thought that perhaps wool is more profitable than wheat, and, in my opinion, it is, especially when last year wheat was sold at a price that barely covered production. If wool prices drop it will pay the farmer to take more interest in sheep because if he takes into consideration the cost of labor, seed, cornsacks, superphosphate, implements, and horse feed, and other expenses incidental to wheat growing, a 10bush. crop will not show much of a return for the year's labor and the amount of energy and capital expended. If that energy and capital were devoted to sheep, a greater return would undoubtedly be received. It is not advisable for the farmer to depend wholly on the wheat crop to bring in the highest interest on his capital expended, but to look to other side lines, such as dairying, &c., and especially sheep."

BARBERA, August 11th.—Mr. A. E. Jones read an article on orchard cultivation. Mr. J. C. P. Bruce also read a paper in which he dealt with many important subjects of interest to the settler.

BLOCK E.—The annual meeting was held on July 15th, when the Hon. Secretary (Mr. E. Fisher) read a report of the year's work, and the officers were elected for the ensuing year.

A further meeting was held on August 12th. A paper, "Manures," was read by Mr. W. K. Tamblyn, and an interesting discussion ensued.

KAROONDA, August 13th.—Mr. H. Sanders, of the Nunkeri and Yurgo Branch, delivered an address, "Experimental Work at Yurgo."

MONARTO SOUTH, August 16th.—An article, "Power Farming," was read by the Hon. Secretary (Mr. C. F. Altmann), and an interesting discussion followed.

MYPOLONGA, August 11th.—Mr. E. Leishman (Orchard Instructor and Inspector) delivered an address, "Orange Picking, Grading, and Packing," to a gathering of 27 members and visitors. Messrs. Nolls and Traeger were presented with the medals they had won at the 1921 River Murray Pruning Competitions.

NETHEERTON, August 13th.—Ten members attended the August meeting, which took the form of a "Question Box," when a number of interesting topics were discussed.

TAPLAN, August 14th.—Mr. Alan H. Robin, B.V.Sc. (Government Veterinary Officer) delivered an address, "Ailments of Stock." The officers for the ensuing year were also elected.

SOUTH AND HILLS DISTRICT.

SHOAL BAY.

August 13th.—Present: 13 members and five visitors.

HANDFEEDING SHEEP.—Mr. G. A. Turner read a paper from the *Journal of Agriculture* dealing with this subject, and in the discussion that followed Messrs. C. Buck, C. Turner, G. Barrett, and G. Turner agreed that handfeeding sheep on chaff in late summer and early autumn was a sound proposition. Members

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generally favored automatic or self-feeders as being the best way to feed chaff to sheep, but, failing these, good feeders could be made with second-hand bags sewn together and threaded through a wire. Mr. G. Turner did not favor feeding lambing ewes with chaff, because an ewe would often leave her lamb to go to feed. Mr. C. Turner said the best way to feed ewes just lambing was to sow a well-worked paddock with about 1½ bush. of oats and 1 wt. super prior to the first rains. This would give a lot of feed through the winter, and then, if the sheep were taken off at the end of August, quite a good cut of hay could be made.

STRATHALBYN (Average annual rainfall, 19.28in.).

August 12th.—Present: 26 members.

Mr. H. Stacy read a paper, "Tractor v. Horse Power on the Farm." The writer detailed costs of both forms of power. His experience after using three different types of machines showed a slight balance in favor of horses. Mr. S. Crawford said that in the Strathalbyn district it would be a mistake for the farmer to depend entirely on tractor power, because horses were necessary when the land was very wet. Mr. T. Rose said that his tractor gave every satisfaction, and he was prepared to work the machine in any land where horses could walk. Mr. Geo. Tucker contributed a paper on "Horses." He favored an open stable for farm horses, allowing them freedom to roam in a small paddock during the night. A horse when working relished being able to roll when it desired. He very seldom used a brush on the horses, and had not experienced sore shoulders for many years.

TWEEDVALE.

August 14th.—Present: 29 members.

MANGOLD GROWING.—Mr. E. S. Miller read the following paper:—"In a district which consists of small holdings, every farmer should grow at least half an acre of mangolds. These are a most valuable fodder for cows, especially during late summer and autumn. Varieties chiefly grown are Mammoth Long Red, Yellow Globe, and Giant Half Sugar. The first and last named are the most productive, but they require rich soil and plenty of manure. Yellow Globe can also be successfully grown on shallow soils if manure is applied. There are many ways of growing mangolds. Some people sow the seed as early as July, sowing 4lbs. or 5lbs. of seed on a piece of land about half a chain square. This is about the correct rate of seeding to produce nice strong plants. If the seed germinates well and comes up too thickly the plants can be thinned out. Plants should be kept free from weeds. I prefer sowing the seed in rows. With a 2½ in. hoe make a furrow about 3 in. wide and 1 in. deep, then into the furrow sow a liberal amount of bone dust or bird guano before sowing the seed, then rake in the furrow with a small iron garden rake, only just covering the seed. Make the rows far enough apart to allow the passage of a wheel hoe, to kill weeds between the rows. In a wet climate I advise sowing the seed during August or the beginning of September, November or even December being early enough for transplanting. Select a well-drained and sheltered place for the seed bed, plough in plenty of stable manure, and cultivate or plough again until the land is perfectly fine before sowing the seed. Care should be taken to secure seed from a reliable seedsman, but I prefer saving the seed on the block. The best way to obtain good seed is to pick out about 18 of the best mangolds on the plot, selecting those with the least side roots, lift them out carefully, and set them in a well-sheltered place where hot winds cannot scorch them. A few buckets of water given to them frequently will greatly assist in increasing the yield of seed. If mangolds grow very high, pegs should be driven in and the mangolds tied to them, otherwise the wind may break them off, and thus reduce the quantity of seed. July is a very good month to select mangolds for this purpose. The soil should receive a good dressing of

cow or pig manure during winter, and then be ploughed over and left until the manure has rotted. If should then again be ploughed or cultivated, and harrowed and rolled to break down the clods. When the plants are ready, harrow about 2cwt. of salt to the acre into the ground. Fowl droppings or bone dust are very good for mangolds, but pig manure is preferred to any other. With a rake or line mark out the lines 2ft. 3in. apart, so as to leave enough room for a one-horse cultivator, then plant out with a spade or other suitable tool. Snip off roots and ears, leave about 15in. between each plant, and press the ground tightly with the foot. Mangolds can be fed to sheep, cows, pigs, or poultry. During the summer the leaves can be stripped and fed to cows, and if fed regularly the animals will produce a very rich flow of milk. Care should be taken not to injure the heart of the plant when stripping the leaves. In a good season I have stripped mangolds four or five times during the summer. Some farmers favor putting the leaves out in a paddock and allowing them to wilt before feeding to cows, but I do not think that is necessary. So soon as wet weather sets in a start may be made to use the mangolds. One or two kerosine tins of cut-up mangolds, fed with an armful of clover or oaten hay, will prove an excellent fodder for cows. If cows do not take readily to mangolds, sprinkle a little salt over them before putting them into the feed box. With a good sharp knife for slicing, enough mangolds for 12 cows can be cut in half an hour. Cows fed on mangolds produce infinitely more milk and cream than those that are not. Onion and potato crops are benefited by planting them in ground just cleared from mangolds. Germination can be forced by soaking the seed a few days before sowing. In dry seasons irrigation is advisable. I do not advise the sprinkler system, nor swamping the whole of the land, because this tends to rot the mangolds, but I recommend making a furrow midway between the rows and allowing the water to run by gravitation along the furrow. I also recommend watering the young plants after, or even before, they have come up, should it be dry. This can best be done with a watering can." A lengthy and interesting discussion followed the reading of the paper.

BLACKHEATH, August 15th.—The Hon. Secretary (Mr. L. S. Pym) read a paper, "Onion Culture," from the *Journal of Agriculture*, and an interesting discussion followed.

CHERRY GARDENS, August 12th.—Mr. C. H. Beaumont (Orchard Instructor and Inspector) gave an address, "Observations in California," to a gathering of 14 members and a large number of visitors.

IRONBANK, August 22nd.—The meeting took the form of a debate, and members discussed the question, "The Necessity for Rolling and Packing Land Before Sowing the Crop."

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LONGWOOD, August 9th.—The monthly meeting was held at Mr. A. Boyes' homestead, and Mr. A. Roebuck gave a detailed account of the 1924 Winter School for Farmers at Roseworthy Agricultural College.

MOUNT PLEASANT, August 8th.—A discussion took place on drought-resistant grasses and summer fodders. Mr. C. Royal spoke of the good results he had obtained by feeding piemelons to breeding ewes, and recommended members to plant some for that purpose during the coming season. Other members related their experiences with lucerne, sorghum, Sudan grass, and crushed oats.

SOUTH-EAST DISTRICT.

KALANGADOO WOMEN'S (Average annual rainfall, 33in. to 34in.).

August 9th.—Present: 17 members.

FIRELESS COOKING.—Mrs. Dowdell read the following paper:—"To make a fireless cooker a box 24in. x 16in. x 14in. deep is required to hold two billycans 7in. high. Fix a lid with hinges on the box, and provide a fastener to keep the lid firmly shut. Line the box and sides carefully with two or three thicknesses of newspaper, and cover this with a piece of flannel or blanket. Smooth the cloth out carefully, and tack with strips of wood in the corners. Next pack the bottom of the box with fine hay, pressing it down tightly to a depth of 3in. Make a cover for the billycan by cutting pieces of cardboard to fit around the can. Cover this with blanket or flannel on the side next to the hay, then cover the side next to the can with ticking or some strong material. Then cut a round piece of cardboard a little larger than the billycan, and sew all together. Insert the billycans into their covers and stand them on the hay in the box, and pack the hay firmly all round until it reaches to the top of the can cover. Make two pillows to fit the top of the box neatly. Line the inside of the cover with a couple of thicknesses of brown paper, then stuff them with hay. They should be 3in. in depth, and must fit the box exactly. Once the food to be cooked is placed in the box it requires no further attention, although it is necessary that the food must be partially cooked before putting it into the box, and reheated before serving it; only a quarter of the usual time for cooking any dish on the stove is required on the stove. The contents of the can must be boiling when put into the cooking box, and, after covering with the cushion and fastening the lid firmly, the box must not be opened until the proper time for cooking has elapsed. The food requires reheating before serving. Do not keep the box in a cold draughty place or on a stone floor.

KONGORONG.

August 11th.—Present: 13 members.

SHEEP.—Mr. C. T. Atkin, who read a paper dealing with this subject, said he intended to deal with the sheep industry because most of the landholders in that district had found agriculture unprofitable. Dairying had also been tried, but in some instances producers were disposing of their cows, and many dairymen were greatly reducing their herds. The sheep industry could be divided into four classes—Dealing, grazing, breeding, and rearing for lambs. He was not in favor of dealing, because lambs from ewes that were constantly changing hands were of a very inferior type, and the wool became very dirty through the sheep being continually on the roads. Grazing could be carried out on practically all of the land in their district, but should be done principally on country that was not suitable for rearing lambs. Breeding and keeping sheep he considered to be the best practice for the Kongorong landholders. That enabled the farmer to continually improve his flock, have a good clip to sell each season, and good sheep to sell. The writer of the paper was of the opinion

that their country was not good enough for fat lamb raising, although several landholders had been very successful. Referring to suitable breeds for grazing, he favoured a fine cross to the strong Merino, and for maintaining the breeding standard of the flock, he thought that they could not do better than use a strong wool Merino ram. Mr. Atkin favoured late lambs; dropped between the middle of August and the first of September. If the farmer desired to obtain the best return from the sheep, it was essential to have the farm well subdivided so that the ewes and lambs would have the best of feed available, and also provide for a frequent change of pasture. Kongorong was a very wet district, and it behoved every owner to take great care to see that the sheep were free from vermin.

KYBYBOLITE (Average annual rainfall, 22in.).

August 14th.—Present: 14 members and three visitors.

DAIRYING.—"Whilst I admit that this is not naturally a dairying district," said Mr. L. S. Davie, "I am of the opinion that unless holdings are large enough to make sheep grazing profitable, dairying is necessary to successful occupation, and I contend that farms of 500 acres or 600 acres or less should make this one of the main branches of mixed farming." Continuing, the speaker said the two most important points to be considered in starting the herd were first, that only the best cows should be procured, and, secondly, that the bull for the head of the herd should be one whose progeny would improve the standard of the herd. His experience was that an average cow would return about £14 per year. In addition, there would be the annual increase of heifers, say, £2 per year, and also what profit could be made from skim milk when fed to pigs. It was quite reasonable to expect to increase these returns by half, and that was where the use of the best bulls would count so heavily. With good stock the great remaining factor in producing maximum results was the provision of the best feed available. The bulk of the pastures should be sown with subterranean clover, and the land heavily top dressed. For special winter feeding, barley and oats, at the rate of 1½ bush. of each cereal per acre, should be drilled in opposite directions. There were no spring crops that could be profitably grown on the average cropping areas except kale, which should give good results on well-drained and clayey loams. Kale had a tendency to taint the milk unless fed judiciously, but if utilised for only two or three hours, immediately after each milking, that objection would be overcome. Other summer crops would be limited to very small areas of maize, sorghum, or Sudan grass and sunflowers, which should be grown on land heavily dressed with stable manure. Although, perhaps, not to be grown to show a direct profit, they would be very valuable in adding a proportion of succulent fodder to the summer diet and in providing a greater variety of food. Sunflowers should be grown, because a good crop could always be depended upon. In addition to the above, a small patch of irrigated lucerne should be sown. Care should be taken to provide drainage for the plot, and it should be limed once in four or five years. In addition to grazing and handfeeding greenfeed, chaff should be fed throughout the year, to which bran and any other concentrates necessary to complete the ration should be added. On all farms limited in area the addition of a silo would mean greatly increased returns by adding to the stock-carrying capacity, and more stock could be carried over the hard times of the year. Young stock in the South-East were slow in developing, and he considered that heifers should never be brought in at a fixed age, but according to development. His experience was that they should not be mated under two and a half years, and in some instances three years was preferable.

MILLICENT (Average annual rainfall, 29.25in.).

August 1st.—Present: 11 members.

BARLEY GROWING.—In the course of a short paper dealing with this subject, Mr. J. Bell said, in order to obtain the best returns from barley, the seed should be sown on well-worked and well-drained black loamy soil. Soon after harvest the grass should be burnt, and the land ploughed to a depth of 3in. or 4in. The land should be harrowed after a fall of rain, and if the soil was lumpy it was

advisable to use a roller. Should subsequent rains fall, and weeds make an appearance, the fallow should be cultivated. About the middle of July seeding should be commenced, sowing at the rate of 40lbs. to 50lbs. to the acre. The land should be harrowed just before and immediately after drilling. After the crop had become well established Mr. Bell advised harrowing, or if the land was at all rough the roller could be used. Stubble land should not be ploughed until after it had received a good rain.

MOUNT GAMBIER, August 9th.—Mr. F. Major read a paper, "The Care of the Ewe." The points he dealt with were assisting the ewe at lambing time, the methods of crutching, and the care of lambs with weak mothers. He advocated placing the ewe which was disinclined to care for its lamb in a small yard, which could be erected with hurdles in the paddock. Messrs. G. H. Kilsby, R. Smith, R. McCormick, G. T. Gurry, and J. Livingston spoke on the subject. Mr. Ad. Kieselbach gave a practical pruning demonstration, which was appreciated by the members. Messrs. Collins and Boardman gave an interesting and lengthy account of the 1924 Winter School for Farmers at the Roseworthy Agricultural College.

TANTANOOLA, August 2nd.—The Hon. Secretary (Mr. R. Campbell) read a paper, "The Cheese Glut," in which several suggestions were made for overcoming the accumulation of stocks which were hampering the operations of cheese factories.

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All communications to be addressed:

"The Editor, Journal of Agriculture, Victoria Square, Adelaide."

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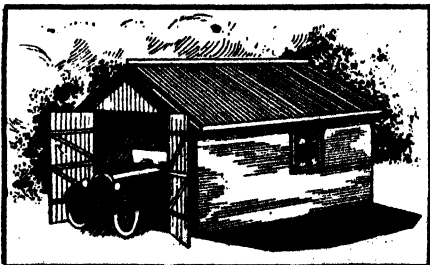
T. BUTTERFIELD,

Minister of Agriculture.

POINTS FOR PRODUCERS.

Wool Production.

The Government Statist (Mr. W. L. Johnston) intimates that the wool production of the State as arrived at from the returns collected annually from sheep-owners, has been proved to be substantially under-estimated. This is most unsatisfactory. Producers should be well aware of the fact that all their returns to the Statistical Department are treated as strictly confidential and are used for no other purpose than to arrive at the grand total production for the State, which it is most desirable should be as accurate as possible. It is hoped, therefore, that all producers in furnishing statistical returns in the future will exercise every care to give the full production from their holdings to the various collectors. As regards wool, there should be no mistake, for every grower sells his full clip and receives the weights from his agents, and should, therefore, be in a position to give the exact figures, yet in a large number of instances figures much below these have been given on the plea that a rough guess was "near enough." It is very strange, however, that these rough guesses generally prove to be much below and not above the actual clip. The Government Statist is circularising a large number of growers this year in reference to this matter, and many of them have already amended their previous figures. Many producers still seem to think that their statistical returns are made use of for taxation purposes. This is not so, for once they have served the purpose for which collected—to arrive at the grand totals for the State—they are soon after burned.



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INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

[Replies supplied by MR. ALAN H. ROBIN, B.V.Sc., Veterinary Officer, Stock and Brands Department.]

"G. P.," Pygery Siding, has mare with very short teats, and foal is unable to suck.

Reply—If the foal cannot suck the mother you have to milk the mare and hand-feed the foal with the milk. If you cannot obtain sufficient mare's milk in this way the necessary quantity can be made up with fresh milk from a cow. Even if you have to feed entirely on cow's milk you ought to be able to rear the foal just as well on it. In hand-rearing foals for the first week feed warm whole milk $1\frac{1}{2}$ pints at a time, six times a day. For the second week use the same quantity of milk, but divide it into four feeds only. Gradually increase the quantity so that when four weeks old the foal gets about $1\frac{1}{2}$ quarts four times a day. During the third and fourth month skim milk may be gradually substituted for the whole milk, adding some linseed jelly in the proportion of 1lb. linseed jelly to each gallon of skim milk. After the fourth month reduce the quantity of milk jelly and bring the foal on to 1lb. to 2lbs. crushed oats and 2lbs. or 3lbs. good hay a day, and so gradually wean him off the milk into solid food. In hand feeding foals in this way always feed the milk at blood heat. Keep the feed bucket scrupulously clean, scalding it frequently, and any increase in the ration should be made gradually.

The Hon. Secretary of the Agricultural Bureau, Murraytown, reports gelding with skin disease, sores and swellings having broken out all over the body.

Reply—The horse's blood is out of order. The skin lesions should be treated by washing in warm, mild antiseptic solution and applying to them a little zinc ointment. Prepare the horse for physic, and when ready give him the following physic ball:—Barbaradoes aloes, 5 drams; calomel, 1 dram; nux vomica pulv., 1 dram. After the physic has worked off feed on sloppy feed and put a handful of Epsom salts in the feed night and morning. Give two tablespoonsful of Fowler's solution of arsenic in the feed daily for a fortnight. Stop for a fortnight and repeat. Add green feed to the ration.

"A. E. S.," Elbow Hill, reports horse with swollen throat on left side. Swelling has broken and is discharging.

Reply—The horse is suffering from an abscess of the parotid gland, and not strangles. The abscess should be opened at the lowest possible point, if necessary, so as to permit of the pus draining away freely to the outside. Wash it daily with warm antiseptic fluid, and then syringe the abscess cavity with some of the same. A solution of lysol or weak Condy's will do. If available finish dressing daily by syringing a little dilute tincture of iodine into the abscess cavity. Keep the abscess open so long as there is any pus forming.

"A. G. S.," Farrell's Flat, asks cause of ewes in lamb dying whilst penned for shearing. Ewes appear to be paralysed in hind legs. (2) Cure for cow with a hole in the teat, caused by barb wire.

Reply—No. 1. The ewes are apparently dying from preparturient paralysis, which is common in fat ewes, attacking them several days before lambing is due. The heavy-in-lamb ewe, if well fed, owing to the weight of the foetus being carried is prone to get lazy and not take sufficient exercise. This induces liver disorder and subsequent mortality. A change of pasture and reduction of feed, requiring sheep to take more exercise in getting it is advantageous. They should be provided with a good salt lick, such as follows:—Salt, 100 parts; slaked lime, 10 parts; sweet ground bonemeal, 10 parts; sulphur, 1 part. No. 2. It will be possible for healing of the hole in the teats to be effected only when the cow is dried off. If the edges of the wound are then scraped so as to make a raw surface, and are then brought into opposition by saturating, the wound should quickly heal up.

"F. O.," Yallunda Flat, has pony heavy breathing, discharging at nose, and severe cough, and has attacks of shivering.

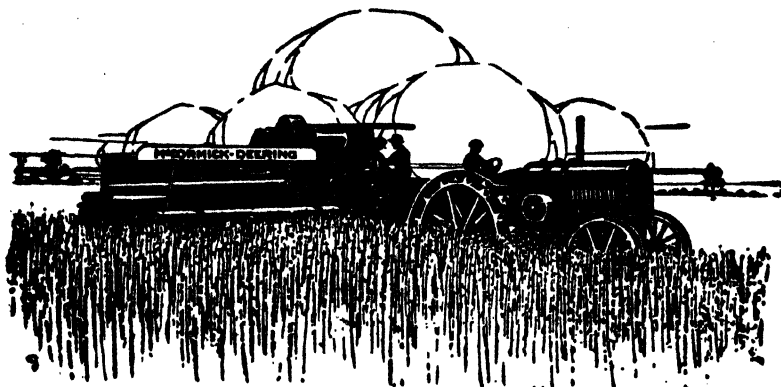
Reply—The pony is suffering from an internal recurring abscess somewhere in the back portion of the throat. There is little or nothing you can do in between times of the abscess maturing and rupturing to prevent it forming. To effect a permanent cure would require probably an operation by a qualified veterinary surgeon. During times when the abscess bursts and discharge from the nose takes place feed the animal on sloppy food or green feed, steam the nostrils over a bucket of boiling water containing a teaspoonful of eucalyptus. Keep him warm and comfortable; water from a bucket and dissolve in the bucket two table-spoonfuls of soda hypo-sulphate daily. After the symptoms have been reduced you could try giving him two table-spoonfuls of Fowler's solution of arsenic daily in the feed for a fortnight; stop for a fortnight, and then repeat again for a similar period. This might help somewhat to prevent or delay recurrence of the trouble.

"D. T.," Port Lincoln, reports two young boar pigs which appear to be ruptured. One testicle in each pig is normal size; the other, which is well down underneath the belly is about the size of a hen's egg.

Reply—Careful examination of the pigs has to be made to determine the exact nature of the enlargements in the purse, whether it is due to hernia, rupture, or due to orchitis of the testicle (inflammatory change causing enlargements). Hernia is reducible by manipulation, orchitis is not; the swelling in this case being firm and irreducible. If the condition of the testicle is one of orchitis, the young boar can be castrated safely in the usual way. After the purse is cut with the knife the adhesions round the testicle can be carefully broken down, and the testicle removed by torsion and fraying of the cord, the wound in the purse being left open as in ordinary castration. In the case of unilateral hernia, which you may have, castration may be safely effected, but requires care and cleanliness. Holding the pig by the hind legs, with the hind quarters raised, reduce the hernia first by manipulation with the fingers, pushing back into the abdomen the protruding bowel. This having been done remove the testicle on the sound side first. The testicle on the ruptured side then can be brought into position alongside the skin wound, and an incision made through the septum which divides the two scrotal sacs. This incision should be made just large enough to squeeze the testicle through, which is then removed through the original skin wound. Two or three sutures must be inserted into the external skin wound and the parts kept clean for a few days till healing takes place.

Hon. Secretary Weavers Agricultural Bureau reports:—(1) Three-year-old filly with slobbers; (2) cause and cure for cowpox, and also is this complaint infectious to milkers?

Reply—(1) Teething trouble is the cause of the slobbering, which should cease when the filly has a full mouth. Examine the mouth to see if the gums are sore or inflamed; if so, occasionally wash out the mouth with a solution of alum. Feed sloppy feed. (2) The condition is due to microbic infection, and is transmissible to milkers. It is usually benign, and runs a mild course providing cleanliness is maintained. Wash the teats and udder with warm boracic lotion,



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very gently and thoroughly, and smear over the affected parts a little anti-septic ointment, such as boracic vaseline. Milkers should always wash their hands thoroughly before and after each milking.

"H. S.," Lyndoch, has dog hangs head on one side, and scratches ear with foot. Dog developed staggering gait in hindquarters, and slight cough as though choking.

Reply—The trouble with your dog is located in the ear, which is affected with canker. Insert a few drops of warm oil into the ear, and manipulate the base between the thumb and forefinger for a short period. Then swab into the ear with a piece of cotton wool wound round a small pair of tweezers, the swab having been previously soaked in a little peroxide of hydrogen, if obtainable. Continue this swabbing until the inside of the ear is thoroughly cleaned of all wax and any other discharge. Pack into the ear then a little finely ground boracic acid. Repeat this swabbing and packing of ear every other day until the trouble ceases. Feed on meat diet. If the trouble is canker of internal ear you are not likely to get any satisfactory results by treatment.

"A. J. H.," Spalding, has gelding whose foot periodically swells at the coronet and discharges matter.

Reply—The condition having become chronic is one which is most likely to be effectively cured only if placed in the hands of a qualified veterinary surgeon for first-hand treatment by him at a time when the foot has broken out. If you are not willing to go to this expense you may try the following for yourself:—When the foot breaks out, remove all hair from the coronet and soak the affected foot in a warm antiseptic solution twice daily so long as there is discharge. Leave the foot soaking for a good half hour, then remove foot from the bath, dry it, and mop out the abscess carefully and thoroughly with a little plug of cotton wool; finally pack the cavity with a little pledget of cotton wool soaked in tincture of iodine.

Hon. Secretary, Rapid Bay Agricultural Bureau, asks method of using silver nitrate pencil to treat leak in the teat of a cow, and (2) cow with retention of afterbirth.

Reply—(1) A fistula in cow's teat can only be cured when the cow is dry. The edges of the wound should be scraped with a sharp knife to make a raw bleeding surface, and then drawn together with a silk suture or two, when healing will usually be rapidly effected. (2) Keep breeding bag irrigated with hot normal saline solution (one teaspoonful of salt to each pint of water) to prevent septic infection taking place. Gentle, but steady, manual traction should be made at intervals on the protruding part of the membranes until removal is effected. Do not allow any protruding portion of the membranes to remain hanging down, but cut it off right up close to the vulva, leaving just sufficient that can be grasped by the hands when traction is being tried. Keep hind parts of cow (tail and rump, &c.) washed clean.

"D. J. G.," Currency Creek, reports aged mare sluggish and swellings on both sides of nose. These disappeared, and subsequently swelling occurred on both sides of belly. Animal is scoured.

Reply—Have the animal's teeth attended to, and give a mild dose of physic, preferably an aloes ball. Subsequently feed on good damped feed with a packet of Epsom salts mixed in night and morning for a week. Have some of the following powders made up, each containing:—Arseni alb., 5 grains; ferri sulphate, 1 dram; powdered gentian root, 2 drams. Give one of these powders twice daily immediately after feeding for about 10 days. Mix the dose in a spoonful of treacle or honey, and smear it over back teeth and tongue so the horse has to lick it down.

"J. L. F.," Mount Barker, has 12-year-old heavy draught gelding with sheath swollen to an enormous size.

Reply—A dropsical condition of the sheath is an indication of constitutional disturbance, and may arise from anaemia, parasitic infestation, or some other organic disease, and most satisfactory results are only to be expected if the originating condition is determined and treated. You should bring the horse in

and keep him for a few days on short rations. Then give a moderate purgative, even though he has been on grass. An aloes ball is the best, as follows:—Aloes, 5 drams; calomel, 1 dram; powdered nux vomica, 1 dram. Subsequently keep him on short feed, but provide plenty of exercise. If sheath is much swollen it may be scarified carefully and treated with cooling antiseptic lotions. The cold water hose could be utilised if available. It would be advisable to support the swollen sheath in a suspensory bandage made out of sacks carried under the abdomen and stitched over the back. Pack a folded empty sack under the sheath to act as a pressure pad. It must be periodically readjusted and arranged so as not to get soiled with urine or interfere with his passing his urine. Give the horse two tablespoonfuls of Fowler's solution of arsenic in the feed daily for a fortnight.

"C. E. M.," Parilla North, reports horse blinded in one eye, and a small white spot has now developed on the edge of the pupil of the other eye.

Reply—You could have the blind eye taken out, but I doubt if it would make much difference to the other eye, which has developed a cataract. This condition may remain stationary, or may continue to increase until it involves the lens of the eye and cause blindness. There is no treatment of any avail in the way of eyedrops. An operation is the only thing that would give relief, but in an old horse, in the state this one is in, it is not economically worth while.

Hon. Secretary, Agricultural Bureau, Yeclanna, reports dog difficulty in passing water.

Reply—It would appear as if the dog is troubled with urinary calculi. Surgical attention in this case would be required to give complete relief, but the following could be tried as a palliative:—Boracic acid, 2 drams; sodi benzoate, 2½ drams; infusion buchu, enough to make up to 10 fluid ounces. Dose, one tablespoonful night and morning. When difficulty in passing urine is noticed, the flow could be stimulated by giving small doses of sweet spirit of nitre (15 to 20 drops in cold water or milk).

Hon. Secretary, Weavers Agricultural Bureau, reports stallion, after serving mare, discharged blood.

Reply—Apparently the animal has strained itself at service. Keep it quiet and right away from any mares. Put it on to half rations, either putting a handful of Epsom salts in the damped feed night and morning, or else supplying green feed as portion of the ration.

DOES SUPER DETERIORATE IF KEPT FROM YEAR TO YEAR?

The question, "Does superphosphate which is kept from one year to the next deteriorate?" is frequently put to the Department of Agriculture. Quite recently the Rapid Bay Branch of the Agricultural Bureau sought information on the matter, and in reply the Chief Agricultural Instructor (Mr. W. J. Spafford) said that during the year March 1st, 1919, to March 1st, 1920, experiments were conducted by the Department of Agriculture on this particular point. At each of the four Experimental Farms, Turretfield, Veitch, Booborowie, and Kybybolite. On March 1st, 1919, six bags of superphosphate (36 per cent.) were weighed, then stored on dunnage in a closed shed, and six bags were placed on dunnage in the open air, each bag being stood on its end and so placed that no one bag was less than 3ft. from its immediate neighbor. Every two months one of the bags under cover and one of those exposed was weighed, and a sample taken for analysis. From these experiments it was found that after 12 months' exposure to the weather the mean loss of water soluble phosphate was 3.1 per cent., and in his general conclusions on the work Professor Perkins, when reporting on it, stated:—"From the above facts we may, I think, conclude that when bags of superphosphate are accidentally exposed to the weather, either on railway trucks or on the farm, the loss of soluble material is not as great as is usually supposed. Apart from caking of the material and subsequent sowing difficulties superphosphate will not suffer very materially from occasional showers."

KIKUYU GRASS.

Kikuyu grass produces very strong underground runners, which travel for some feet below the surface in sandy soil, and so it occupies the whole of any block of land in which it will grow well, and because of these underground stems it is extremely difficult to eradicate once it has become established. Although a sub-tropical grass, it is doing well in all sorts of soil in districts with temperate climate, but, like all summer-growing crops, needs irrigation if the summer rains are not good, to permit of its making luxuriant growth. At present it is promising to be a very useful grass in districts with good rainfall and in soils not suited to cropping, but in many places the chances are that buffalo grass would be just as useful, and in some couch grass might do as well as it. If you are thinking of giving it a trial, only utilise a place which you think you will never require for cropping.

[Mr. W. J. Spafford, Chief Agricultural Instructor, in reply to a correspondent seeking information relating to Kikuyu.]

STACKING WET HAY.

In reply to an inquiry submitted by the North Booborowie Branch of the Agricultural Bureau, the Chief Agricultural Instructor (Mr. W. J. Spafford) says it is generally recognised that if stacking is continued after rain has fallen on a partly built stack, without removing the wet hay, there is a grave danger of heat developing in the hay, with some wastage. It is also known that the presence of sufficient salt will retard the activities of the bacteria leading to this overheating, so that in all but extreme cases of wetting by rain, loss can be prevented by evenly distributing ordinary coarse salt throughout the remainder of the stack, using from 14lbs. to 28lbs. of salt per ton of hay. This salt will increase the palatability of the hay for all livestock as well as preserve the hay.

FLAX.

A correspondent in the Watervale district seeks information respecting the cultivation of flax. The Director of Agriculture (Professor A. J. Perkins) supplies the following reply to the questions raised:—

(a) Flax is essentially a damp-climate crop, and, from the point of view of the fibre, a crop requiring a high proportion of cloudy skies. Where the seed alone is a consideration it adapts itself more readily to brighter conditions of climate and even to moderate drought. I believe that it could be grown successfully at Watervale. It might even be grown there at a profit, but I am unable to say offhand without a better experience on the subject in that particular district. I may say that flax is grown successfully in various parts of Victoria, chiefly for fibre, combined with such seed as can be secured for the purpose.

(b) You should certainly use the ordinary flax or linseed; that is to say, *linum usitatissimum*.

(c) The seed can be secured from any of our local seedsmen.

(d) The most suitable time to sow would be in the autumn, corresponding with the wheat-sowing period of your district.

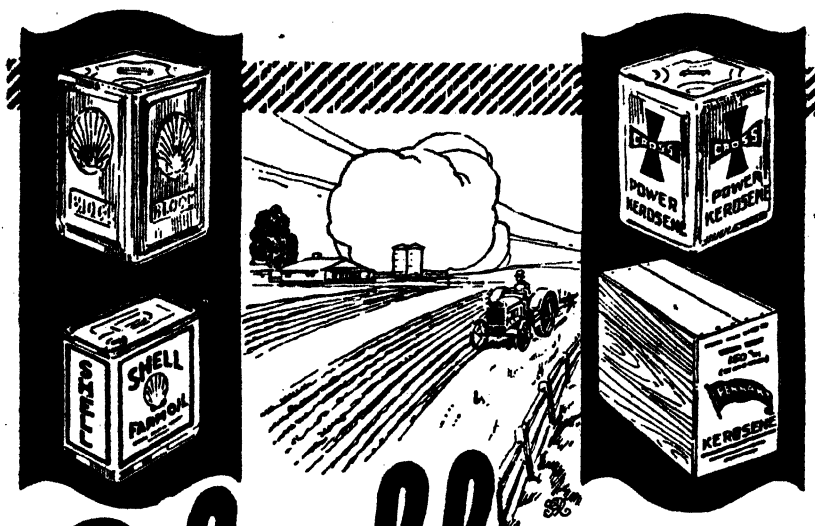
(e) I believe that there is a ready sale for linseed in the State. As to the fibre itself, possibly the Victorian millers might purchase, providing there were large quantities available, and the quality was of a character to attract them.

WIMMERA EYE GRASS.

The following replies have been supplied by the Chief Agricultural Instructor (Mr. W. J. Spafford), to the undermentioned inquiries from the Blackheath Branch of the Agricultural Bureau:—

Question 1: What is the best way to procure Wimmera rye grass?

Answer: All of the larger firms of seedsmen stock Wimmera rye grass seed, and it can be procured from them. When a plot has been established, it can be harvested with a stripper if it was not too rank to stand up, otherwise it can be cut and threshed.



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Question 2: Can the seed of Wimmera rye grass be sown in the same way as subterranean clover seed is sown?

Answer: As with the other kinds of rye grass, that known as Wimmera rye grass should be sown on well-worked land. It is usually sown with a cereal crop, and then seeds itself down after the crop is harvested.

Question 3: What is the best method of establishing Wimmera rye grass on pasture land?

Answer: This grass is not very suitable for growth on rough stony land, and on other pasture lands can be seeded as above. Wimmera rye grass is an annual plant much relished by livestock, but on present appearances it is only suitable for temporary pastures, and requires that the land on which it is growing be cultivated every now and again, in exactly the same way as many other annual fodders are dependent on cultivation. It is proving useful in some of our wheat-growing districts, but at its best is only replacing barley grass, Cape weed, &c.

FODDER PLANTS FOR LIGHT RAINFALL CONDITIONS.

So far, we have not discovered many fodder plants which can be cultivated to advantage in low rainfall conditions. To a correspondent at Cowell the Chief Agricultural Instructor (Mr. W. J. Spafford) recommended the following as being worth extended trials in those conditions:—

Lucerne.—The hardiest fodder plant for low rainfall conditions that we know is lucerne, and it will produce good grazing pastures even where the average rainfall is only 10in. to 12in., providing the land is of light texture and phosphatic manures are applied. The seed should be sown immediately after the first rain in the autumn at the rate of 6lbs. to 10lbs. per acre, by broadcasting it on the surface after 1cwt. superphosphate to the acre has been drilled in. The seed should be covered by rolling, or with a light brush harrow made by tying bushes to a piece of timber. Shallow seeding is essential for success. When grazing the lucerne, it should be fed off rapidly, and the stock be removed to allow of further growth, and on no account should the fields be made to carry livestock for long periods of time without a spell. Small fields allow of proper grazing of pastures, whereas large fields always lead to mismanagement. The lucerne fields should be top-dressed with from ½cwt. to 1cwt. of superphosphate per acre per year in your district.

Wimmera Rye Grass.—Although Wimmera rye grass is an annual, it behaves in the field in a manner somewhat similar to barley grass, at all events to the extent that it seeds itself. Unlike barley grass, this rye grass is much relished by livestock in all stages of growth, and even when dry. It should be seeded in the early autumn at the rate of 8lbs. to 10lbs. of seed per acre, with a dressing of superphosphate.

King Island Melilot.—On sandy land where phosphates have been used this leguminous fodder will grow comparatively well if the seed germinates with the first rain. Although an annual, it reseeds itself if not overgrazed. The seed should be sown in the autumn at the rate of 6lbs. to 8lbs. of seed per acre.

Buffa'o Grass.—This grass is usually grown in lawns, but is very hardy, and will grow fairly well on sandy land, even on a "blow-out." The roots should be planted about a yard apart each way. Better returns are secured if the grass regularly receives some phosphatic manure.

Sheep's Burnet.—If any of the above-mentioned fodder plants were being tried, Sheep's Burnet should be mixed with the seed, so that 1lb. was sown per acre. This plant is really hardy, and would make some growth after every rain.

AGRICULTURAL INVESTIGATIONS, WITH SPECIAL REFERENCE TO THE INFLUENCE OF PHOSPHATES ON CROPS AND PASTURAGE AT ROSE-WORTHY AGRICULTURAL COLLEGE.

[BY W. J. COLEBATCH, B.S.C., M.R.C.V.S., AND R. C. SCOTT, DIPLOMA R.A.C.]

(Paper read before Agricultural Section of Australasian Association for the Advancement of Science.)

The Permanent Experimental Field at the Roseworthy Agricultural College was established in 1905 by the then Principal (A. J. Perkins), who was the first agricultural investigator in Australasia to realise the importance of adopting the system followed so successfully at Rothamsted. The oldest plots in this field have been under observation for 19 years, but owing to the vagaries of the seeding season in 1923 it was impossible to complete drilling, and we have therefore to base the conclusions drawn from these plots on the mean results of the 18 years period, 1905 to 1922.

From time to time during this period changes have been made. Some plots that proved unsatisfactory have had to be abandoned, and the space thus made available has been used for further tests. The original area, 120 acres, has been enlarged on several occasions, and now amounts to 287 acres, which may be regarded as the maximum acreage that can be set aside for this purpose on a mixed farm comprising less than 2,000 acres.

In consequence of these modifications and extensions, some of the tests referred to will be found to cover periods of shorter duration, and due weight must be attached to this point when these data are under review.

The chief advantages attaching to the system of repeating tests over an unbroken series of seasons on plots permanently reserved for the purpose are:—

1. The elimination, as far as possible, of disturbances, due to soil environment.

2. The accumulation of data under conditions as nearly identical as possible over a succession of years in order that the mean influence of the climatic factor may be measured, and the true average in a normal season determined. Further, the net effect of the errors that are inseparable from field experiments is reduced to a minimum when the work is carried out by men trained in accurate and precise methods.

Even on a comparatively large area it is rarely possible to submit to trial more than a small proportion of the problems that suggest themselves as worthy of systematic study. Unless plots are arranged in duplicate or triplicate, it is important that they should exceed in area the unit of land measurement, and whilst advantages may very properly be advanced in support of what are termed "replicated" plots of

small dimensions, the reduction in area to mere fractions of an acre renders it far more difficult to maintain conditions akin to those prevailing in the wheat fields of the countryside; and again the conclusions arrived at from such diminutive trials are not accepted with the same confidence by the farming community. It is certainly advantageous to shorten the pathway to knowledge by any means at our disposal, and from this point of view the value of small replicated plots as a quick method of acquiring information which will help to determine the advisability or otherwise of conducting trials on a larger scale is freely admitted. They have also their uses in connection with variety studies, crop yields, plant diseases, and purely academic investigations. Ultimately, however, the facts brought out by such tests require to be confirmed by results obtained from permanent field plots, not less than an acre in size, before they can be recommended for adoption by practical men.

There are, of course, certain classes of work for the study of which large plots are essential. Tillage and rotational plots, for example, cannot be satisfactorily tested on very small areas. The inequalities of the soil are, in many instances, so marked that it is difficult to enclose a fair average of the land inside short boundaries. Further, in connection with rotation plots there is, in addition, the matter of computing stock-carrying capacity, and this difficulty increases progressively with each reduction in the grazing area.

From these observations we arrive at the conclusion that large plots are essential to progress in agricultural investigations, and at this point we are met with the problem of utilising to the fullest value the maximum area that can be devoted to purely experimental work.

At Rothamsted some of the plots have been continued for 80 years, and many others have been in progress for over 70 years. Such plots are replete with interest, and furnish a basis for valuable chemical and statistical investigations. They are also of direct service in revealing the ultimate effects of manurial residues, in modifying the texture of the land, and determining the character of the herbage it is best fitted to produce.

It is open to question, however, whether in the case of large field plots compensating advantages are to be gained by prolonging the life of the tests indefinitely. The chief factor to be considered is the weather, and although crops are at times affected by abnormally high and low temperatures, untimely hailstorms, and withering winds, it is the rainfall that is chiefly responsible for the variations in yield. We conclude, therefore, that in a district of limited rainfall the annual precipitation and its distribution should constitute the grounds upon which the "useful" life of such plots should be determined. When they have been continuously in operation for a period during which the mean annual total and annual "useful" rainfalls are approximately equal to the corresponding "normal" figures as calculated from the records of a long series of years, the data yielded may be accepted as reliable, provided always that the duration of the plots be not less than 15 to 20 years. Records of such standing will not be affected materially by ordinary seasonal variations, and even very abnormal

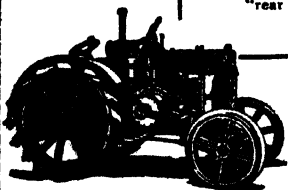
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years will fail to affect the soundness of arguments based upon them. This conclusion relates mainly to manurial and tillage tests conducted on short cycles. Rotational plots that give promise of yielding valuable data will naturally have to be maintained for longer periods, the limit in each case being determined largely by the number of courses in the rotation.

Bearing upon this question, it should be of interest to refer to the relation of the rainfall records since the inception of the College to the amounts registered, subsequent to the initiation of the permanent experimental plots.

TABLE I.—*Showing Mean Total and "Useful" Rainfall at Roseworthy College, 1883-1922.*

	Mean Annual "Useful" Rain.	Mean Annual Total Rain.
10-year periods—	In.	In.
1883-1892	15.95	18.79
1893-1902	13.34	16.29
1903-1912	14.64	17.90
1913-1922	13.52	17.07
20-year periods—		
1883-1902	14.64	17.54
1903-1922	14.08	17.48
40-year period—		
1833-1922	14.36	17.51
Experimental plot period (18 years)—		
1905-1922	14.20	17.59

From these figures it will be noticed that the mean useful rain during the life of our oldest plots is 0.16 of an inch below normal, and the mean total fall is 0.08 of an inch above normal. Such minute differences may be reasonably neglected as being without noticeable influence on crop yields, and the data obtained from many of the plots may therefore be taken as final and conclusive evidence on the problems they were designed to elucidate.

The abandoning of any plot, or series of plots, that have stood for a number of years, however, is a matter for serious consideration, notwithstanding the fact that they appear to have served their purpose. There may be instances in which the evidence disclosed is not weighty enough to justify such action. Again, the results may be of such an unexpected nature that confirmation is desirable, or it may be that observations have suggested that the plots should be preserved in order that secondary effects may be further studied. Apart from special circumstances, however, it seems desirable where space is restricted to limit the duration of the plots with a view to the substitution of others, thereby extending, as far as possible, the scope and utility of the Experimental Station.

PHOSPHATIC FERTILISERS.

The phosphatic manures that have been tested at Roseworthy are superphosphate of lime and basic slag. The former has been applied in two series of plots, namely:—

(a) *Reversion Plots.*—In this series an attempt has been made to gauge the effects of superphosphate on a wheat crop when drilled in on the fallow of the previous year.

(b) *Manurial Plots*.—The comparative effects of light and heavy dressings, on wheat crops grown in two and three course rotations, has been investigated in these plots.

SUPERPHOSPHATE.

In all cases the 36/38 soluble phosphate grade of super has been employed.

(a) *Reversion Plots*.—These were planned in 1915, and we now have eight years' work to comment upon. The speed at which the water soluble phosphoric acid in superphosphate reverts to a "citrate soluble" and "acid soluble" condition when drilled in with the seed depends upon many factors, and we were not in a position to say, with reference to our own soils, whether retrogression is sufficiently slow to justify the practice of sowing the major portion of the fertiliser early in the autumn, for the purpose of saving time in the busy seeding season. This is a subject which is frequently raised by farmers located in light mallee districts. It would certainly be advantageous if it could be carried out without reduction of yield, particularly where large areas have to be sown, and in seasons characterised by late seeding rains. The plots under consideration throw some light on this subject, and they also serve to indicate how far reliance may be placed on the unexhausted residues of previous doses of superphosphate in regard to an annual crop such as wheat.

The scheme of the tests is as under:—

Second Year.	Third Year.	First Year.
Group I.— Bare fallow. 1cwt. super. No seed	Wheat { a. No manure. b. $\frac{1}{2}$ cwt. super. c. 1cwt. super. d. 2cwts. super.	Bare fallow.
Group II.— Bare fallow. 2cwts. super. No seed.	Wheat { a. No manure. b. $\frac{1}{2}$ cwt. super. c. 1cwt. super. d. 2cwts. super.	Bare fallow.

The grain and hay harvest are given in summary in the subjoined table:—

TABLE II.—*Showing Mean Hay and Grain Yields from Reversion Plots, 1916-1923.*

	Hay per Acre.			Grain per Acre.	
	T.	C.	L.	B.	L.
Group I.—Bare fallow, 1cwt. super.—					
No manure	1	15	108	17	34
$\frac{1}{2}$ cwt. super.	2	0	21	19	49
1cwt. super.	2	4	54	21	22
2cwts. super.	2	4	85	22	27
Group II.—Bare fallow, 2cwts. super.—					
No manure	1	18	60	18	54
$\frac{1}{2}$ cwt. super.	2	2	11	21	10
1cwt. super.	2	5	47	22	21
2cwts. super.	2	3	110	22	34

Several interesting points arise out of this schedule of figures. Confining attention to Group I., in which the fallow received 1cwt. of superphosphate, we find that the addition of $\frac{1}{2}$ cwt. with the seed in

the succeeding autumn gave an average increase of 2bush. 15lbs. per acre. With wheat at 4s. 6d. per bushel and superphosphate at 4s. 6d. per cwt. the net value of the resultant increase is 7s. 10d. per acre.

With the application of 1cwt. superphosphate at seeding a further increment of 1bush. 33lbs. was obtained, the net profit from the additional outlay being 4s. 9d. per acre. It might well have been anticipated that any further attempt to increase the dose at seeding would result in monetary loss, but at present values this has not proved to be the case. The raising of the amount to 2cwts. per acre was followed by an average annual increase of 1bush. 5lbs. over that harvested from the plot receiving half that quantity. This will meet the additional outlay, but the net profit per acre remains unaltered.

In the corresponding hay tests the position is not dissimilar. The increment derived from the second $\frac{1}{2}$ cwt. is quite as large as that yielded from the first, but the response to the additional hundredweight is inadequate to cover costs.

Turning to Group II., the plots in which received 2cwts. of superphosphate on the fallow, we find that the yields are on a slightly higher standard, but on the whole there is a striking similarity in the returns. The increased grain yield due to the first $\frac{1}{2}$ cwt. is 2bush. 16lbs., and from the second $\frac{1}{2}$ cwt. 1bush. 11lbs. There is, however, a decided falling off in the returns from the second hundredweight.

The hay returns indicate that the fallow dressing is beginning to make itself felt. The records from the different quantities of manure reveal smaller increases, in fact, from the plot receiving 2cwts. at seeding, plus 2cwts. on the fallow, the yield though high is lower than that from the one receiving 1cwt. less at seeding.

In the following table the difference for each gradation in manuring is shown, together with net profits based on wheat at 4s. 6d. per bush., hay 3s. per cwt., and superphosphate at 4s. 6d. per cwt.

TABLE III.—*Showing Increased Returns and Net Values of Same. Reversion Plots, 1916-1923.*

	Grain.			Hay.		
	In-crease.	Net Value.		In-crease.	Net Value.	
	B.	L.	s. d.	cwts. lbs.	s. d.	
Group I.—						
1st— $\frac{1}{2}$ cwt. super.	2	15	7 10 $\frac{1}{2}$	4 25	10 5	
2nd— $\frac{1}{2}$ cwt. super.	1	33	4 9	4 33	10 8	
2nd—1cwt. super.	1	5	0 4 $\frac{1}{2}$	0 31	-3 8 (loss)	
Group II.—						
1st— $\frac{1}{2}$ cwt. super.	2	16	7 11	3 63	8 5	
2nd— $\frac{1}{2}$ cwt. super.	1	11	3 1	3 36	7 9	
2nd—1cwt. super.	0	13	-3 6 (loss)	-1 49 (loss)	-8 10 (loss)	

A close scrutiny of these returns leads to the conclusion that whilst superphosphate applied 12 months prior to seeding is not without influence on the crop, particularly when sown in relatively large amounts (2cwts. per acre) still its presence in the soil does not render it unnecessary to apply additional quantities at seeding. The point at issue is whether under like circumstances the seeding dressing can be reduced without loss in yield, and from the trials it would appear that in districts where the maximum economic dose for crop production is not more than 1cwt. per acre any reduction will be attended

by a diminution of profits. This is well brought out by comparing returns from certain plots as under:—

TABLE IV.—*Showing Effect of Applying Superphosphate at Seeding, 1916-1923.*

Manure on Fallow.	Manure at Seeding.		Grain.	Hay.
cwts.	cwts.		Bush. lbs.	Tons cwts. lbs.
2	0	.....	18 54	1 18 60
0	$\frac{1}{2}$	.....	18 23	1 17 79
0	1	.....	19 42	2 0 72
2	$\frac{1}{2}$	.....	21 10	2 2 11
2	1	.....	22 21	2 5 47

It will be observed that the $\frac{1}{2}$ cwt. dressing gave within half a bushel of wheat and 1cwt. of hay of a full 2cwts. applied a year earlier. We conclude, therefore, that the stimulating effect of freshly applied superphosphate is essential to maximum yields, and that under Roseworthy conditions no system of wheat manuring is adequate that does not provide for the application of at least 1cwt. per acre at seeding.

SUMMARY OF DEDUCTIONS FROM REVERSION PLOTS.

1. Up to a limit of 1cwt. per acre of superphosphate the maximum dressings required to produce maximum economic crops of wheat or wheaten hay should be applied at seeding irrespective of any quantities that may have been applied 12 months earlier. This means that land that failed to grow a crop and is being sown again the following season should receive the usual quantity of superphosphate.

2. Superphosphate applied many months ahead of seeding is not lost, but undergoes reversion into less soluble forms, which are unfitted to promote rapid development of the root system in the early stages of growth. The presence of the reverted phosphate leads to increased crop yields, as may be observed by comparing the unmanured plots in the two groups; the effect of the second hundredweight being to raise the grain yield by 1 $\frac{1}{2}$ bush. and the hay yield by 2cwts. 64lbs.

(b) *Manurial Plots—Superphosphate.*—In addition to the reversion series, two groups of plots are concerned with the investigation of the action of superphosphate when applied to wheat crops. In the first group the effect of the fertiliser on grain and hay yields from crops grown on the two-course system is under test. The other group comprises five lots of three plots each worked in the bare fallow-wheat-pasture rotation and receiving varying amounts of superphosphate in the cereal year.

1. *Two-course Rotation—Bare Fallow-Wheat—1905-1922: 18 years.*—In many parts this simple rotation is giving way to three and four course systems in consequence mainly of the profitableness of livestock, but large areas are still perforce worked on the alternate cropping plan. Moreover, this practice is likely to be a feature of our farm practice for many years to come where the holdings are small and inadequately fenced and subdivided. Under these circumstances much importance is rightly attached to quantitative tests conducted in accordance with this plan, and the mean results obtained from 18 years'

work are peculiarly valuable to the farming community. In the following table are shown the mean returns in grain and hay.

TABLE V.—*Showing Means Yields from Dressings of 1 and 2cwts. of Superphosphate, together with Corresponding Returns from Check Plot—Bare Fallow-Wheat Rotation. 1905-1922—18 years.*

	No Manure.			1cwt. Super.			2cwts. Super.		
	Bush. lbs.			Bush. lbs.			Bush. lbs.		
Grain	14	53		18	33		20	42	
	T.	C.	L.	T.	C.	L.	T.	C.	L.
Hay	1	12	72	2	0	42	2	3	36

Adopting the same values as before, the net profits per acre per annum work out as follows:—

	1cwt. over Unmanured Plot.	2cwts. over 1cwt.	2cwts. over Unmanured Plot.
Grain	12/-	5/2	17/2
Hay	18/8	4/4	23/-

The obvious deduction from this table is, that under our conditions of soil and climate, it is profitable to apply up to 2cwts. per acre to wheat sown either for hay or grain. Unfortunately, we have no plots receiving more than 2cwts. in this group, but if we assume a third hundredweight to be effective in the same ratio to the second as the latter was to the first, we will discover that for grain crops up to 3cwts. per acre could be used profitably, whilst for hay crops the optimum would be in the vicinity of 300lbs.

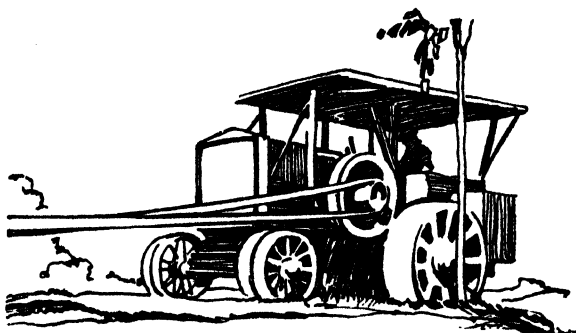
THE INFLUENCE OF RAINFALL ON THE ACTION OF SUPERPHOSPHATE.

Phosphoric acid hastens germination, encourages rapid and luxuriant root production, accelerates the ripening processes, and reduces the amount of water required by the plant for the production of a unit of dry matter. It is not difficult, therefore, to understand why its influence on crop growth is more marked in dry than in wet years.

The extent to which this has been our experience at Roseworthy is evidenced by the appended summary. For the purposes of this table, all seasons in which the "useful" rainfall was below the mean (14.63in.), have been grouped as "dry years," the remainder going to form the "wet year" section. It so happens that there are 9 years included in each group.

TABLE VI.—*Showing Effect of Superphosphates in Wet and Dry Periods.—1905-1922.*

Mean "Useful" Rain.	Grain.				Hay.			
	Dry Seasons. 11-04in.		Wet Seasons. 17-47in.		Dry Seasons. 11-04in.		Wet Seasons. 17-47in.	
	B.	L.	B.	L.	T.	C.	L.	T.
No manure	10	42	19	4	1	3	9	2
2cwts. super.	16	40	24	44	1	13	48	2
								13
Percentage increase over un- manured plot	55-76		29-72		44-81		27-34	



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Perusal of this table shows how potent is the influence of phosphoric acid in years of low rainfall. It also brings out the fact that the hay crops being less dependent on moist spring conditions yield lower percentage increases than grain crops. In the final stages of ripening, the presence of phosphates is of paramount importance, and may be the chief factor in determining the fate of a grain crop.

2. Three course rotation. Bare fallow—Wheat—Pasture.—So far as is known, the field from which these plots were fenced off had not received any artificial manures prior to being subdivided.

Each individual plot is enclosed in a sheep-proof fence, and we are therefore able to secure separate grazing results. This provision gives an opportunity of gauging the value of fertiliser residues in raising the stock-carrying capacity of the land. It also enables us to draw up a statement of revenue and expenditure over the whole rotation, and thus to compute the net return per acre per annum from each series. At the outset we will confine attention to the grain and hay yields, both of which are given in summarised form below.

TABLE VII.—*Showing Mean Returns from Various Quantities of Superphosphate Applied to Wheat in Three Course Rotation. Bare Fallow-Wheat-Pasture. 1910-1923.*

Superphosphate per Acre-cwts.														
		0		$\frac{1}{2}$		1		2		3				
Grain		B.	L.	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.	
		11	53	16	52	17	56	17	56	16	24			
Hay	T.	C.	L.	T.	C.	L.	T.	C.	L.	T.	C.	L.		
	1	4	72	1	13	71	1	17	82	1	17	82	1	15	56

TABLE VIII.—*Showing Differences in Yields from Increasing Quantities of Superphosphate. Bare Fallow-Wheat-Pasture.*

		Superphosphate per Acre.											
		First.			Second.			Second.			Third.		
		$\frac{1}{2}$ cwt.			$\frac{1}{2}$ cwt.			1 cwt.			1 cwt.		
		B.	L.		B.	L.		B.	L.		B.	L.	
Grain increase.....		4	59		1	4		0	0		1	32	(decrease)
Net value of increase.....		20/2			2/7			4/6	(loss)		11/5	(loss)	
		T.	C.	L.	T.	C.	L.	T.	C.	L.	T.	C.	L.
Hay increase		0	8	111	0	4	11	0	0	20	0	2	6 (decrease)
Net value of increase.....		24/9			10/-			5/-	(loss)		10/8	(loss)	

Referring to the mean yields of produce, the most striking fact is the increase due to the first half hundredweight of superphosphate. In grain, the difference is approximately 5bush. and in hay nearly 9cwts., and since only about 20 per cent. of the superphosphate consists of phosphoric acid, these remarkable effects must be attributed to the distribution of no more than 10-12lbs. of this essential material over each acre of land. The second half hundredweight also increases yields, but to a much smaller degree, particularly in respect of grain. The hay yield is raised by a considerable amount, namely, 4cwts. 11lbs., but the grain yield is only slightly improved, the increase being 4lbs. in excess of a bushel.

In the absence of a plot receiving $1\frac{1}{2}$ cwts., we have to base deductions on the effects of a third half hundredweight on yields won from the

plot receiving 2cwts. of superphosphate, and this, it will be noticed, is an unprofitable amount to apply either for hay or grain. The mean yield of grain from the 2cwts. plot is exactly equal to that from 1cwt. less, but inasmuch as the second half hundredweight caused an increase of 64lbs., and taking into account the rate at which the increase per gradation in manuring declines, it may be inferred that the most profitable amount of superphosphate per acre for wheat on the bare fallow-wheat-pasture rotation is about 1½cwts. when grain yield alone is being considered. When the crop is destined to be cut for hay, the dressing can be increased up to about 1½cwts., without exceeding the profit-earning limit.

In making a comparison between the limits of profitable manuring in the two-course and three-course rotations, it must be borne in mind that the experiments do not cover precisely the same periods. In the latter case the work has only been in progress for 14 years, and to put it on the same basis as the two-course figures available to-day, it will have to be continued for a further period of 13 years. It is to be expected, however, that lighter applications in the three-course plots will suffice to produce maximum returns since the land is cropped less frequently and undergoes natural recuperation during the resting period.

We must now proceed to examine the effects on pasturage of the manurial residues left in the soil after the crops have been supplied. At Roseworthy we have adopted the grazing method of measuring these effects. Great care is necessary to secure equality of treatment under this system, but we know of no other that is open to less objection. With experienced management, sufficiently accurate results can be obtained from plots of two to three acres, and when the experiments are continued over a long series of years, the unconscious errors cancel out to a very large extent.

In a three-course rotation we are able to carry sheep on the cereal stubbles, the rape and graminaceous pasturage, the autumn grazing before fallowing, and on the fallows themselves. The worth of fallow grazing has been worked out on the farm areas to be equivalent to one-quarter of a sheep per acre per annum. In the plots, special tests of fallow grazing have not been made, although, as a matter of observation, it may be stated that on the heavier dressed plots the fallows are worth more for grazing.

TABLE IX.—*Showing Effect of Varying Amounts of Superphosphate on Sheep-Carrying Capacity of Land. (Figures indicate number of sheep per acre per annum).*

	Stubble Grazing.	Fodder Pasturage.	Autumn Pasturage.	Total Grazing.	Value of Grazing at 20s. per Sheep. £ s. d.
No manure	0.52	0.76	0.06	1.34	1 6 10
½cwt.	0.67	1.09	0.09	1.85	1 17 0
1cwt.	0.72	1.35	0.14	2.21	2 4 2
2cwts.	0.80	1.59	0.19	2.58	2 11 7
3cwts.	0.75	1.51	0.22	2.48	2 9 7

The returns from the lighter dressings are in much the same relation to one another as the corresponding crop yields just considered. The value of the pasturage improves steadily with each additional quantity of fertiliser, but in this case the improvement continues a stage further, the peak occurring on the 2cwts. plot.

Judged by its influence on pasturage, without reference to crop production, this figure, 2cwts., does not appear to mark the limit to which we may employ superphosphate economically. In all probability the pasturage would be improved without monetary loss by increasing the annual dressing to 2½ or even 2¾cwts. per acre. The question, however, of the optimum quantity cannot be settled without taking into account the influence of the fertiliser on the mean return per acre per annum over the whole rotation, and this involves the combination of the crop and grazing returns, which have already been discussed separately.

TABLE X.—*Showing Combined Cropping and Grazing Returns from Bare Fallow-Wheat-Pasture Rotation.*

	Value of Grain Crop at 4s. 6d. per Bushel.			Value of Hay Crop at £3 per Ton.			Grazing Value at 20s. per Sheep.			Gross Total Value.		Net Total Values (Super. 4s. 6d. per cwt.).			
												Grain plus Grazing.		Hay plus Grazing.	
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
No manure	2	13	6	3	13	11	1	6	10	4	0	4	5	0	9
½cwt. super.	3	15	11	5	0	11	1	17	0	5	12	11	6	17	11
1cwt. super.	4	0	8	5	13	2	2	4	2	6	4	10	7	17	4
2cwts. super.	4	0	8	5	12	8	2	11	7	6	12	3	8	4	3
3cwts. super.	3	13	10	5	6	6	2	9	7	6	3	5	7	16	1

Consideration of the combined returns leads to the conclusion that the most profitable quantity of super to apply—whether the crop be for hay or grain—is the normal dressing employed at the College, namely, 2cwts. of 36/38 grade. In order that the various findings submitted in the foregoing pages may be clearly grasped it may be well to summarise them at this stage in so far as they refer to superphosphate.

Summary of Conclusions Drawn from Experiments with Superphosphate in Bare Fallow-Wheat and in Bare Fallow-Wheat-Pasture Rotations.

1. Under the two-course rotation up to 2cwts. can be applied remuneratively to either hay or grain crops. This has been demonstrated, and although actual proof is wanting there are indications that for hay the amount could be raised to 300lbs., and for grain to 3cwts. per acre with benefit to the grower.

2. For wheat crops grown in a three-course rotation with pasture and fallow our conclusions are:—

- (a) For crop alone the limits of profitable manuring are 1½cwts. for grain and 1½cwts. for hay.

- (b) For rotational grazing without reference to crops yields up to 2cwts. can be used economically, and it appears probable that an additional $\frac{1}{2}$ cwt., or possibly even $\frac{1}{4}$ cwt., would be profitable.
- (c) Taking both sources of revenue into consideration 2cwts. per acre is found to have yielded the highest net return per acre, irrespective of whether the crop be cut for hay or harvested as grain.

BASIC SLAG OR THOMAS PHOSPHATE.

Although it was not anticipated that a citrate soluble type of phosphatic fertiliser would compare favourably in its mean effects in a district of relatively low rainfall and on soils not deficient in lime it was thought advisable to submit it to test. Accordingly provision was made for it amongst the bare fallow-wheat manurial experiments to the extent of two plots, one of which received 2cwts. and the other 3cwts. of slag per acre.

The period covered by these tests is now 17 years, and consequently the mean results may be taken as being sufficiently accurate to enable us to form very definite ideas as to merits of this fertiliser in comparison with superphosphate. The conclusions will, of course, apply only to the case of wheat (hay or grain) grown in a district receiving 17 inches of rain, or less.

In the subjoined table are given particulars showing returns of hay and grain in high rainfall and low rainfall years, in addition to the averages over the whole period of the trial.

TABLE XI.—*Showing Influence of Basic Slag on Wheat, Comparatively with that of Superphosphate. Bare Fallow-Wheat Rotation, 1906-1922.*

Mean Yields.	No Manure.		2cwts. Super.		2cwts. Slag.		3cwts. Slag.	
	B.	L.	B.	L.	B.	L.	B.	L.
Grain—								
8 dry seasons	9	8	16	21	12	26	14	22
9 wet seasons	18	55	25	4	23	2	23	57
17 years—1906-1922	14	19	20	58	18	3	19	26
Hay—								
8 dry seasons	T. 1	C. 0	L. 28	T. 1	C. 11	L. 60	T. 1	C. 8
9 wet seasons	2	4	20	2	15	77	2	12
17 years—1906-1922	1	12	103	2	4	35	1	18

In the first place it is clear that slag has a very beneficial effect on wheat, even in this district, the increase in hay or grain over the unmanured plot being amply sufficient to pay for the manure and leave a good credit balance. Even at the present cost of slag, which is quoted at £6 10s. per ton, the application of one-third hundred-weight is a profitable practice in the case of hay crops. With grain, however, this policy results in a loss of a few pence per acre.

The second point to consider is the comparative values of slag and superphosphate. In expressing costs in money values superphosphate must be given the benefit of 2s. per cwt., as it is available

at from £4 5s. to £4 10s. per ton on our markets. The two hundred-weight plot shows a balance of 2bush. 55lbs. in favour of the water soluble fertiliser, and this represents a nett balance of 17s. 2d. per acre. There is, therefore, no room for difference of opinion as to the relative merits of these two fertilisers for grain production in districts of moderate rainfall.

With regard to hay 2cwts. of superphosphate have returned 20s. 1d. per acre more than 2cwts. of slag, and 18s. 11d. more than 3cwts. of slag. The position of slag, therefore, is no stronger when viewed from this aspect than in the preceding case.

It remains to consider the influence of rainfall on the action of slag, and with this end in view the mean results of the dry and wet seasons have been set out in the following table. The differences are very marked, especially in relation to grain crops. Taking the 2cwts. plot as the standard the differences in yield between it and the two slag plots expressed as percentages of the mean return from the standard plots work out as follows:—

TABLE XII.—*Showing Percentage Differences in Yields from Basic Slag in Dry and Wet Seasons, Using 2cwts. Superphosphate Plot as Standard.*

	Decreases in Yield expressed as Percentages of Returns from 2cwts. superphosphate Plot.	
	Grain.	Hay.
Basic slag, 2cwts.—		
Dry season	23·96	15·30
Wet season	8·11	10·48
Basic slag, 3cwts.—		
Dry season	12·13	8·77
Wet season	4·45	5·08

From this series of figures the first point that emerges is the fact that whereas superphosphate is relatively more efficient in dry seasons basic slag is more so in heavy rainfall years. In a general way it may be stated that basic slag is about three times for grain crops and for hay crops about $1\frac{1}{2}$ times as effective in wet as in dry years. This has an important bearing on the utility of this manure in humid regions, but is of very little significance where natural and artificial water supplies are limited.

As an addendum to this report on manurial experiments we wish to submit for discussion by members of this Association some ideas and proposals connected with the subject of experimental agriculture in Australia.

We have in the Commonwealth an ever-increasing number of young men trained in agricultural science, many of whom are being called upon to conduct field and laboratory enquiries into questions of fundamental importance to the practical agriculturists, and inasmuch as agricultural production and rural development will in the future

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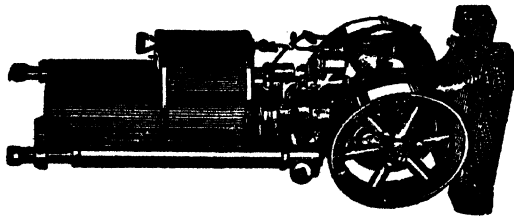
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turn largely on the result of their labours, the furtherance of their efforts by every means at our command becomes a matter of national concern. The prime responsibility in this rests mainly upon the shoulders of the Federal and State Governments. To them is entrusted the framing of our agricultural policy, and on their sagacious foresight will depend in great measure the extent to which the agricultural problems of Australia are unravelled in the near future. Their whole-hearted sympathy and practical support are vital to the expansion, indeed, even to the maintenance of the systematic inquiries already instituted, and when it is realised that agricultural research in Australia has as yet hardly shed its swaddling clothes, the plea for liberal sustenance and fostering care by those in authority will be recognised as well-founded and opportune.

Whilst the final responsibility falls on the political powers, however, there are undoubtedly obligations of no mean order to be discharged by the departments, institutions, and educational bodies that are charged with the elucidation of these problems, and the dissemination of agricultural truths and findings. It is to this subject that our earnest thought should be given. Are we, even at the present time, organising our activities and exploiting our opportunities to the limit of our powers? Is it not possible for improvements to be effected in regard to standardisation and co-ordination by co-operative effort and combination?

It appears to us that very little has been done as yet to overcome the disadvantages that are an inevitable corollary to the intervention of wide stretches of space and time between groups and individuals. The stimulus of collaboration, the inspiration and encouragement arising from discussion and enthusiasm engendered by intimate knowledge of the ambitions and objectives of others, are felt in minor degree only, if at all, under present circumstances.

In Great Britain much has been achieved by the Agricultural Education Association along the lines indicated, and the time seems ripe for the formation of an analogous body in Australia.

Amongst the several functions which it would be expected to discharge may be mentioned the classification and publication in an annual volume of all forms of experimental work, field and laboratory, having a bearing on agriculture in Australia. Hitherto we have been able to glean a little knowledge of the progress being made in distant centres from the pages of the departmental publications, but there is a vast amount of work carried out that is of little direct value to the farmer, and in consequence does not appear in print. This work, however, may be of engrossing interest to other investigators, and consequently it is eminently desirable that progress reports giving complete records of the whole of the work undertaken each year should be brought together in an annual reference volume.

Only in this way can we obtain readily a conspectus of agricultural investigations in our own country, and in this field of activity, as in others, it is necessary to take stock regularly and thoroughly in order

to acquire a knowledge of the work of others, and thus to avoid unnecessary repetition and expense.

In the second place, there is need for the standardisation of methods of procedure. In the designing of experiments, the execution of the work, and the interpretation of results there is a lack of uniformity which could be largely obviated without affecting the local value of the work. In every instance where the experiments are akin the work should be brought as closely into alignment as possible, and we feel sure that if definite proposals to this end were placed before investigators the recommendations of a representative committee would be very widely adopted. We have in mind such questions as size and duration of plots, standards of quality and gradations in quantity of seed and fertilisers, rules for determining the "real value" of seeds, conditions governing stockfeeding tests, milk and butter producing trials, and breeding experiments. To give effect to these suggestions will admittedly involve the appropriation of funds and the expenditure of valuable time. In consequence they may be regarded by some as being outside the realm of practical politics at the present juncture. This bogey, however, is usually raised whenever fresh items of expenditure are proposed, and in any event the end in view is of such paramount importance to the future of this great Commonwealth that we should be failing in our duty if we allowed the question of ways and means to be lightly brushed aside.

Had the dream of a Federal Bureau of Agriculture been allowed to materialise that body would have been the proper authority to undertake the co-ordination and standardisation of experimental work. In its absence we submit that the Federal Government should be urged to render financial assistance, and to share with the State the responsibility for the appointment of a Commonwealth Agricultural Research Association competent to bring about the desired reforms. It may be deemed more appropriate to place the matter in the hands of the Federal Institute of Science and Industry, although our own conviction is that whilst the collation and publication of annual reports might be confidently entrusted to the Institute, the defining of standards is a matter for consideration and decision by those actually engaged upon investigational work.

Finally, we express the view that if a conference of those actually engaged in conducting experimental work were convened at intervals of two or three years a vast amount of benefit would accrue. Each representative would have his vision widened and his enthusiasm stimulated by exchange of views upon points of difficulty in his own work, as well as in that of others. New ideas would be gathered and fresh light would be thrown on problems already under investigation.

In addition it may be urged that each member of such a conference would return to his own station refreshed in intellect and inspired with new ambitions.

SUDAN GRASS AS A FODDER.

[By A. T. JEFFRIES, B.Sc., State Agricultural Chemist, Agricultural College, Roseworthy.]

Sudan grass (*Andropogon Sorghum* var.) is a native of Africa, and probably the original parent of the cultivated Sorghums. It stools readily, and under favorable circumstances may reach a height of 10ft. In temperate and sub-arid climates such growth is not attained, yet for a quick growing summer crop sudan grass is rapidly becoming popular in South Australia for green feed, and its value for hay is gaining recognition.

With the warming of the soil as summer approaches comes the time for sowing. The seed, if planted too early, while the ground is still cold, fails to germinate and simply rots in the soil.

Sudan grass, grown at Roseworthy College last season, was tested in various stages both in regard to its feeding value and to its toxic properties, and the results appear to justify its growing popularity.

The following table shows the analysis of the plant, and indicates its value.

Analysis of Sudan Grass, Grown at Roseworthy College, 1923-24.

	Sudan Grass.			Oaten Hay.
	Per cent. Before Heading.	Per cent. In Flower.	Per cent. Milk Ripe.	Per cent.
Moist. in green plant	78.5	74.6	51.7	--
Air-dry material	21.5	25.4	48.3	--

Analysis of Air-Dry.

Moisture	7.05	6.76	8.45	7.00
Ash	8.30	7.95	7.25	5.58
Proteins	9.75	10.87	4.31	3.35
Ether extract (fat)	1.29	1.72	0.76	2.68
Fibre	24.60	24.45	28.60	26.37
Carbohydrates	49.01	48.31	50.63	55.07
	100.00	100.00	100.00	100.00

It will be noticed that there is a phenomenal falling off of proteins during the ripening period, the percentage dropping from 10.8 to 4.3.

A loss of proteins on maturing has been noticed elsewhere, but not to any such an extent as above recorded. No explanation of this can be given, and it is expected that analyses of subsequent crops will show the excessive loss to be abnormal.

Proteins are the most valuable constituents of a fodder, and it is interesting to note that the sudan hay, even when cut late, contains a larger per cent. of proteins than last season's oaten hay, an average analysis of which is shown. At the flowering stage, however, appears to be the best time to cut sudan grass for hay.

KYBYBOLITE EXPERIMENTAL FARM IRRIGATION EXPERIMENTS.

[By L. J. Cook, Manager].

During the spring and early summer of 1923, 12 acres were prepared and sown with a variety of crops to be irrigated, including maize and sorghums for grain, sorghums, Sudan grass, lucerne, mangels, berseem, chou moellier, and sunflowers for forage.

Maize for grain was sown on Block C on the previous year's maize stubbles. September, 1923, was a wet month, over 4in. of rain being recorded, and this was followed by 2in. during October, thereby preventing the heavy soil of the irrigation area being ploughed and worked to a suitable tilth until well towards the close of October. Planting was therefore done on October 31st and November 1st.

The soil was well prepared and given a dressing of 2cwts. superphosphate per acre. Maize seed was sown at intervals of 12in. in rows 42in. apart. The seed was sown in the furrow and the land rolled and harrowed immediately afterwards. A really good germination was secured.

A light irrigation was given at the close of November and medium irrigations at the close of December and January. Nearly 3in. of rain fell during February, followed by 1½in. in March, so that no irrigations were required after January.

The maize grew quickly and well and made a splendid growth of stalks and leaves. It also flowered and cobbed well, but the damp, cool autumn greatly retarded ripening, and it was not until the heavy frosts of late May and June that the husks lost their color and grain commenced to harden. However, the grain ripened well in the crib, and on shelling and weighing some very satisfactory yields were recorded.

Cultivations were frequently given between the rows of maize during growth, and a fair amount of hand hoeing in the rows was necessary. Six varieties were again grown, with several selections, and types of each, all with similar seeding, manuring, and treatment.

The following table shows the amount of moisture received by the maize during its growing period:—

Moisture Received by Maize, 1923-24.

Date.	Rainfall.	Irrigations.	Totals.
1923.	Points.	Acre-In.	Acre-In.
November	1.08	1.87	2.95
December	1.74	3.18	4.92
1924.			
January	0.92	2.88	3.80
February	2.76	—	2.76
March	1.53	—	1.53
April	0.85	—	0.85
Totals	8.88	7.93	16.81

The following table shows the various plots of maize with their respective yields in order of merit:—

Yields of Maize Varieties, Kybybolite, 1921-22 to 1923-24.

Variety.	Area.	Total Yield.		Yield per Acre.		Variety Yield per Acre.	
	Aeres.	Bush.	Lbs.	Bush.	Lbs.	Bush.	Lbs.
Boone County White, 1921 seed	0.188	14	10	75	27	—	—
Boone County White, 1922 seed	0.370	25	45	70	0	71	43
Silvermine	0.451	31	32	70	8	70	8
Improved Yellow Dent, 1922 seed . .	0.326	23	27	72	10	—	—
Improved Yellow Dent, 1921 seed . .	0.163	9	6	55	48	66	39
Early Yellow Dent, 1922 selected seed	0.489	32	44	67	12	—	—
Early Yellow Dent, 1922, bulk seed .	0.759	50	11	66	8	66	29
Early Leaming, 1921 seed	0.063	4	1	63	40	—	—
Early Leaming, 1922 local seed . . .	0.063	4	8	66	2	—	—
Early Leaming, 1922 seed	0.451	28	5	62	15	62	44
Red Hogan	0.257	14	16	55	36	55	36
Total	3.580	238	5	—	—	—	—
Average	—	—	—	—	—	66	25

The above table shows some good returns, the highest that we have secured, by cultivating maize for grain. This probably is partly due to growing the rows of maize closer together. This year all rows were 42in. apart, whereas in previous two seasons most of the maize was grown in rows 48in. apart.

The following table shows the yields of maize varieties secured under irrigation at Kybybolite:—

Yields of Maize Varieties, Kybybolite, 1921-22 to 1923-24.

Variety.	1921-22.		1922-23.		1923-24.		1921-24.	
	Bush.	Lbs.	Bush.	Lbs.	Bush.	Lbs.	Bush.	Lbs.
Boone County White	60	40	47	25	71	43	60	3
Early Yellow Dent	63	46	42	11	66	29	57	29
Silvermine	36	20	62	48	70	8	56	25
Improved Yellow Dent . . .	49	41	49	46	66	39	55	25
Early Leaming	—	—	45	33	62	44	54	13*
Red Hogan	46	13	41	4	55	36	47	34
Means	51	44	46	32	66	25	55	0

* Two seasons only.

The next table shows the amount of moisture received by the maize crops for the three seasons, 1921-1924, together with the average annual yield of grain:—

Moisture Received by Maize, 1921-24.

Season.	Rainfall. In.	Irrigations. Acre-In.	Totals. Acre-In.	Grain Yield per Acre. Bush. Lbs.
1921-22	6.69	10.07	16.76	51 44
1922-23	3.84	12.38	16.22	46 32
1923-24	8.88	7.93	16.81	66 25
Means	6.47	10.13	16.60	55 0

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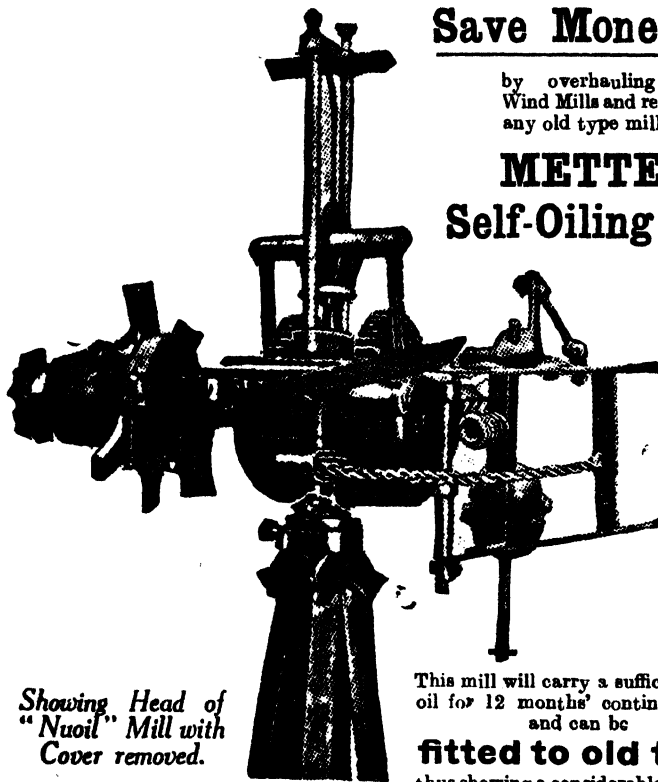
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NOTES ON VARIETIES.

Boone County White.—This is proving a consistently prolific variety, producing fine, large well-filled cobs. The above table shows that for the three seasons this variety has yielded, on an average, 2½ bush. per acre more than any other variety. We have two distinct types of plants. Those growing from seed purchased in 1921 produce short stalks and scanty leaf growth, but more cobs and greater grain yield; plants from seed purchased in 1922 make good, tall growth (up to 10ft. in height) with plenty of leaves. There is not much difference in size and appearance of cobs.

Early Yellow Dent.—Though lower down in the list of yields for this year, Early Yellow Dent still maintains second position for the three year period. It is a comparatively early ripening sort, and makes only a medium growth of stalk and leaf. It ripens its grain well.

Silvermine.—This variety again yielded very well, and is most promising. It makes a quick, tall (up to 12ft.) and leafy growth. It cobs profusely, many plants having two cobs per stalk. The cobs, however, are small and are tough to pull from the stalk. It ripens early, and the grain is of a fine, large, white type.

Improved Yellow Dent.—This is a better growing maize than Early Yellow Dent, but is later in ripening and does not cob quite as well.

Early Leaming.—This variety is somewhat disappointing. It makes good growth of stalk and leaf and produces fine, large cobs, which, however, do not ripen grain evenly.

Red Hogan.—This is a later type of maize. It makes good, healthy plants, but yields have been consistently lighter than those of the earlier types.

SORGHUMS AND SUDAN GRASS FOR GRAIN AND FORAGE.

In view of the good results secured during the summer of 1922-23 with the cultivation of introduced sorghums for grain production (up to 64 bush. per acre), further trials were made this season.

An area of about 2½ acres was sown to 11 introduced varieties, together with a plot of Sudan grass. The land was well prepared and seed drilled in with bonedust on November 22nd and 23rd. However, the soil and weather conditions were still cold for such seeds and germination on the whole was very slow and poor. Sudan grass gave the best germination, whilst Feterita and other grain sorghums produced a very poor stand.

Two light irrigations were given, one in early January and one in early February, but the summer was generally cool, and all varieties were slow in developing. The Kafirs and grain types made particularly poor growth.

Sudan grass made the quickest growth and gave a fair second cut, but none of the sorghums made sufficient second growth to warrant cutting.

Small plots of each variety were left for grain production, but only an odd head or two set grain, and practically no grain matured.

The following table shows the yields of green forage secured from the various varieties, also the dates on which they were cut:—

Forage Yields of Sorghums, 1923-24.

Variety.	Dates of Cutting.	Area. Acres.	Total Yield		Yield per Acre.	
			Cwts. lbs.	Tons	cwts. lbs.	Tons
Kansas Orange Sorgo.	April 29-May 7	0.233	30 56	6 10 101		
Red Amber Sorgo.	April 3-9	0.242	24 84	5 2 31		
Black Amber Sorgo.	March 24-31	0.400	39 98	4 19 77		
Early Sumac Sorgo.	April 15-19	0.165	15 14	4 11 75		
Freed Sorgo.	April 10-15	0.242	14 98	3 11 52		
Sudan grass	February 25-27	0.255	18 0	3 10 66		
	April 1-2					
	May 20					
Sunrise Kafir	May 17	0.495	28 0	2 16 63		
Dawn Kafir						
Pink Kafir						
Dwarf Hegari		0.495	Failure	—		
Dwarf Yellow Milo						
Peterita						
Total		2.032	8 11 14	4 4 24		

The above recorded yields are unsatisfactory and show that plenty of summer heat is essential for sorghum cultivation. Of the varieties, Kansas Orange Sorgo (a type similar to Amber Cane) stood out as the most prolific forage producer, growing to a height of 6ft. to 7ft. and stooling well. The Red and Black Amber Sorgos are of similar types, but much earlier and do not produce such bulk of feed. Sudan grass, though it produced two fair cuts of greenfeed, did not weigh out well in comparison with sorgos.

LUCERNE.

A small block of 1.62 acres was graded, subsoiled, manured, and sown to lucerne. The soil was mostly of a stiff clay nature and would not work into suitable tilth until November. A dressing of stable manure was given during the winter, and 2cwts. superphosphate per acre on November 13th. Eighteen pounds of Hunter River seed was broadcasted per acre on November 16th and rolled in. A good germination was secured, but the lucerne made rather slow initial growth. Water was applied at the close of November, early January, and February, and a fourth watering after cutting late in March. On January 18th the mower was run over the short growth, which was having a tendency to flower, and thereafter the lucerne brightened and formed quite a thick stand.

The following table shows the weights of green lucerne secured from the plot in two cuttings:—

Harvest Results of Green Lucerne, 1923-24.

Date or Cutting.	No. of Cut.	Total Yield.		Yield per Acre.	
		Tons	cwts. lbs.	Tons	cwts. lbs.
February 25-March 22	First	8	12 0	5	6 19
April 4-May 9	Second	5	19 28	3	13 68
Total		14	11 28	8	19 87

The lucerne stood the following winter well, and a good yield is anticipated during the coming summer.

MANGELS.

An area of 2½ acres was sown to varieties of mangels for the production of roots for winter feeding to milk cows. The land was well prepared and sown on November 19th. Mangels were drilled in rows 28in. apart and at the rate of 4lbs. of seed and 50lbs. of bonedust per acre. A very fair germination was secured, but caterpillars attacked the Champion Yellow Globe variety very badly, and to a less extent the Golden Tankards.

All varieties were thinned to 10-12in. apart in the rows when the plants were a handy size. Three good irrigations were given, one each in early December, January, and February, and a light irrigation towards the close of March. The horse hoe was put between the rows whenever necessary, and a fair amount of hand hoeing was also done.

The mangels completed growth during June and the leaves died back during early July, when the mangels were pulled and stored.

The following table shows the yields of the different varieties:—

Yields of Mangel Roots, Kybybolite, 1923-24.

Variety.	Area. Acres.	Total Yield.			Yield per Acre.		
		Tons	cwts.	lbs.	Tons	cwts.	lbs.
Mammoth Long Red	0.75	22	12	84	30	3	75
Golden Tankard	0.75	14	0	0	18	13	37
Champion Yellow Globe	0.75	8	4	70	10	19	56
Totals	2.25	44	17	42	19	18	93

Of the varieties, Mammoth Long Red was outstanding in its yield, but it must be remembered that the yields of the other two varieties were depreciated by attacks of caterpillars early in the season.

CHOU MOELLIER.

A small plot of this fodder was grown alongside the mangels. It received similar cultivation and irrigation. However, the crop did not get away well and only one stripping of leaves was secured.

The yield of this forage is shown as follows:—

Yield of Chou Moellier Forage, 1923-24.

Stripping, &c.	Date.	Area. Acres.	Total yield.			Yield per Acre.		
			Tons	cwts.	lbs.	Tons	cwts.	lbs.
First and only stripping	April 9-11 . .	0.11	0	9	84	4	8	71
Plants cut ground level	June 11-20 . .	0.11	1	17	14	16	17	56
Total		0.11	2	6	98	21	6	15

SUNFLOWERS.

A collection of seven varieties of sunflowers was grown in single rows with the view of testing the periods of growth of the different sorts and their palatability to stock. The Large Russian type made very quick growth, reaching 10-12ft. in height and making large leaf growth. There were three varieties of this type tried, viz.—Black Seeded, Striped Seeded, and Morphett's Selection. The last named produced the largest leaves and seed heads, but the Black Seeded made

the tallest growth. All three were palatable to cattle. Other types made more branch growth and thinner stems, but were slower growing and produced less forage. The miniature sunflower, and also the mealy leaved variety were late in maturing, keeping green well into June. Cattle did not at all care for either of these two types of forage. All the early types ripened good seed, but as the plots were small no record of weights were taken either of grain or forage.

BERSEEM.

A further trial was given to Berseem this autumn. A small plot of 0.63 was summer fallowed, limed at the rate of 1 ton per acre, and well prepared. Seed was sown at the rate of 36lbs. with 2½cwt. bonedust per acre on February 25th. A very fair germination was secured, and one irrigation was given during March. Two fair cuts were taken during the winter, as shown in the following table:—

Yields of Berseem Forage, Kybybolite, 1924.

Date of Cutting.	No. of Cut.	Area. Acres.	Total Yield.			Yield per Acre.		
			Tons cwt. lbs.			Tons cwt. lbs.		
June 24-July 11 . .	First . .	0.63	4	15	28	7	11	21
September 1-13 . .	Second . .	0.63	3	9	0	5	9	59
Total		0.63	8	4	28	13	0	80

The above result is sufficient to warrant further trials with this valuable fodder.

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VISITING DAY AT BOOBOROWIE.

The Government Experimental Farm, Booborowie, was on Wednesday, October 29th, the meeting-place of a number of Mid-Northern farmers who visited that institution for the purpose of inspecting the crops and the work being done there. About 120 members of neighboring Branches of the Agricultural Bureau and other representative farmers attended. They were conducted over the holding by the Manager (Mr. E. A. Bristow) and accompanied by the Secretary, Advisory Board of Agriculture (Mr. H. J. Finnis).

This farm is 1,484 acres in extent, and consists of two blocks. One is the old North Booborowie homestead block, which runs up to the highest point of the Brown's Hill Range; the other, situated two miles from the homestead, is a plain's block subject to inundation in times of heavy rainfall.

TOUR OF INSPECTION.

The party of visitors made a start from the homestead about 10 a.m., and first inspected an area of approximately five acres sown to subterranean clover during April. Four pounds of seed of this clover together with 1cwt. superphosphate per acre had been distributed. The resulting germination and growth had been quite satisfactory.

PERMANENT EXPERIMENTAL WORK.

Experimental work at this institution is conducted on permanently placed plots. The first of this work which came under the notice of the party was the series of rotation plots. Twelve different rotations are under observation. Additionally, one of the plots, namely, that devoted to the pasture-bare fallow-wheat rotation, is further divided into five sub-plots, each of which when sown to wheat received different manurial treatment, varying from $\frac{1}{2}$ cwt. to 3cwts. of superphosphate per acre, with a check plot receiving no manure. At the present time each of the plots carrying cereals is showing excellent promise, particularly is this the case with wheat.

MANURIAL PLOTS.

In addition to the rotation plots, permanent experimental work is being carried out with the object of determining the most suitable manurial dressing for wheat in a bare fallow-wheat rotation. In all, 23 different manurial dressings are under observation. Superphosphate, nitrate of soda, sulphate of ammonia, muriate of potash, basic slag, farmyard manure, gypsum, and lime, alone and in various combinations, are being tried along with a check plot not manured. The plots are an acre in extent, and are carrying Federation wheat. For the eight-year period during which these plots have been under observation, the two check plots not manured have averaged 21bush. 36lbs.

and 21bush. 40lbs., respectively, per acre. The plot which has received $\frac{1}{2}$ cwt. superphosphate per acre has averaged 26bush. 32lbs. All plots which have received heavier dressings of fertilisers have returned yields higher than this and up to 32bush. 42lbs. per acre, the average during the past eight years from the plot dressed with $\frac{3}{4}$ cwt. superphosphate.

CULTIVATION PLOTS.

Cultivation tests designed to determine the most satisfactory cultivation practice for wheat growing in this district are being conducted on a series of six plots. Four are being early fallowed (July), two late fallowed (after September 1st), and one autumn ploughed. The conclusion arrived at after eight years' work with these plots is that the most satisfactory procedure for wheat growing under these conditions is to plough the land early, and allow it to remain untouched during the winter, rather than break it down before the spring. Depths of ploughing carrying from 3in. to 9in. are also being tested. The results secured to date suggest that it is not an economical proposition to deep-plough under these conditions.

GENERAL CROPPING.

Apart from the area devoted to experimental work, 250 acres are under cereals, 136 acres being sown to wheat, 82 to oats, and 32 to barley. The scheme of cropping is based partly on a three-course rotation (bare fallow-wheat-oats, or barley), and partly on a four-course rotation (pasture-bare fallow-wheat-oats, or barley). Different varieties of cereals are under observation in these plots, including a number of wheats recently introduced into South Australia from the neighboring States, including Western Australia.

LIVESTOCK.

The livestock carried on this farm is as follows:—Horses, 40, including 14 mares, 4 fillies, 12 geldings, and 10 foals. Cattle, 34—2 bulls (milking shorthorn), 7 young bulls, 22 cows and heifers, and 3 calves. Sheep, 929—14 rams (Merino), 604 ewes (Grade Romney Marsh), 311 lambs. Pigs, 49—3 boars (Berkshire), 12 sows, 34 youngsters.

The wool clip secured from the farm block this year was the heaviest on record, averaging 11.35lbs. per head from matured sheep. The wool was extra long in staple and of good quality, being exceptionally well grown and free from any defects.

LUNCHEON.

The visitors were entertained at luncheon and afternoon tea by a number of local ladies who ably assisted Mrs. Bristow (wife of the Farm Manager) in the work of catering. A number of visitors voiced their thanks to the ladies, and also expressed their appreciation of the work being done by Mr. Bristow and his assistants on this farm.

THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.—CONGRESS, 1924.

WOMEN'S SESSION.

For the first time in the history of the Agricultural Bureau movement, a session was this year arranged solely for women. This was well attended, and addressed by Dr. Gertrude Halley, Medical Inspector of Schools, and by Mr. W. L. Davies, a member of the Kalangadoo Branch of the Agricultural Bureau.

HEALTH OF COUNTRY CHILDREN.

Dr. Gertrude Halley expressed great pleasure at the official recognition of women's part in agriculture. Women took, she said, a very great part of the hard work of the farm, and so had a special claim to any privileges of rural education offered by the Government. The Bureau meetings would be particularly useful to city girls who had married agriculturists, and were going on the land without any idea of how to meet their special difficulties, or to make the best use of home-grown produce. Leaders of the Bureau could render a service equally great in becoming missionaries of health and sanitation. She explained how infectious diseases spread, and the importance of building the body up to offer strong resistance to disease germs. Country people got plenty of fresh air in the day time, but, since most human beings, on the average, spent four months of the year in bed, it was equally important to have well ventilated sleeping quarters. The closed bedroom window was seen in country districts more often than not. Children walking long distances to school, especially after milking several cows, needed a hot meal at night and a hot drink before beginning school work. Rheumatism was also prevalent in country schools, where children were accustomed to sit in their damp shoes and stockings. She outlined the precautions necessary to minimise infection, and expressed the opinion that it was not the school but the picture show and the backyard which provided the most contacts. Children were rarely in a state to pass on infection when they attended school. The great difficulty was lack of care by parents in preventing the children kept home from school playing with others. It was significant that the number of cases of infectious diseases had increased in an exact ratio with the rise of the picture show. In her school inspection work, she had frequently had the picture show closed where formerly the school would have been emptied. Under the Health Act it was an offence for a person suffering from an infectious disease to travel in a public conveyance, and a few prosecutions would probably do a great deal of good to the community. Country people who were out of reach of professional advice would often be extremely grateful for direction on how to disinfect and take due sanitary

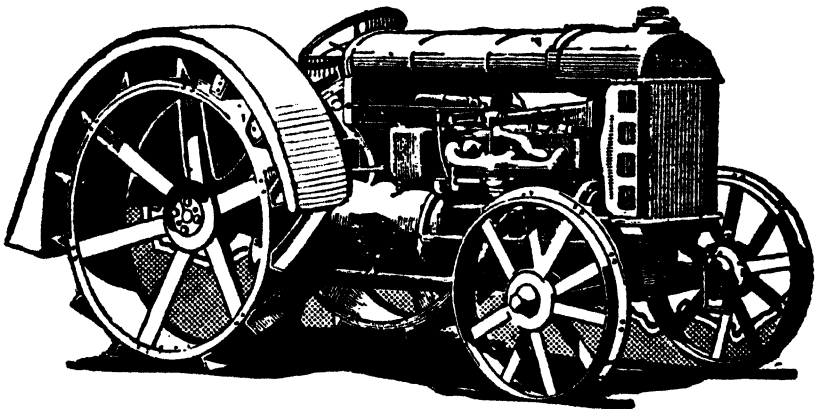
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precautions in case of illness, and she outlined some simple and effective methods, which Bureau leaders might advise. If people would only take the care not to spread infection, or allow their children to spread it, infectious diseases could be completely wiped out. Dr. Halley was warmly thanked for her talk.

WOMEN AND FARMING.

A discussion then took place on agricultural education for women. Various opinions were expressed, some members holding that women were not fitted, physically or by temperament, for the hard work of a farm, and that women's work in agriculture lay in attending to home and to sidelines, such as gardening, butter making, and poultry. It was pointed out by Mrs. Wakeham that there were in this State women who were anxious to go on the land on their own account, and that at present there were no facilities for training. There was no desire to force women to undertake farm work, but since women in England had shown conclusively that they could engage with pleasure and profit in some forms of agriculture, and since many women would not, in the natural order of things marry, they should have some right to choose as their life work a productive enterprise that would benefit the country. The Waite bequest provided for a women's agricultural college, and only a residential school of training, apart from the men's college, would meet the purpose. Women would have to ask for such facilities, and ask continually, if they wished to get them. It was decided to devote further consideration to the scheme.

RURAL DOMESTIC SCIENCE.

The proposed short course of rural domestic science available to Bureau members was discussed, and disappointment was expressed that the scheme had not yet met with Government approval. Mrs. Messenger moved, and Mrs. Filsell seconded, the following motion, which was unanimously carried:—"This Conference regrets that the proposed rural domestic science course has not yet been held, and hopes that in the near future it will be carried out. We feel sure that it will be greatly appreciated, and that support will be available from the women of the country." On the motion of Mrs. Hammat, seconded by Mrs. Sands, the following was carried:—"This Conference suggests that the Department of Agriculture add to its staff some experts who could come and give practical demonstrations to our Branches—particularly a woman doctor to give health talks, and an authority on domestic science."

A PLEA FOR THE FARM WOMEN.

"The man on the land may make a periodical valuation of his live stock and dead to determine his financial position. He will write off a certain amount for depreciation, but which of us can place a valuation on the best asset we have—our women folk—and who will calculate the amount of depreciation brought about by impaired health, after the result of our own thoughtlessness or indifference?"

This challenge was made to fellow-agriculturists by Mr. W. L. Davies, of Kalangadoo. He began his paper by deprecating the idea

that he wished to pose as a champion of distressed femininity. What he wanted was to suggest a few things, small in themselves, and seemingly insignificant, whereby the daily routine of the woman on the land might be lightened and brightened.

A HEARTLESS JOKE.

How often, he said, did they see the life of those on the land made the subject of so-called humor in papers that professed to be comic. One might just as well try to think of Hood's "Song of the Shirt," one of the most pathetic of poems, as a huge joke. For his part he had a very keen sympathy for those noble women who left the comparative ease and comfort of a life close to civilisation and went out to battle, in company with their husbands, sons, or brothers, in places where conveniences were few and the odds were decidedly against them. He had a very vivid recollection of a time when, as a child, he was taken with his five sisters and two brothers into Gippsland by rather a thoughtless father and a zealous mother, who, for the love of the thing, pitted her small amount of strength against the wilds of the bush. The results were a grave in a scrub cemetery and a bereaved husband and eight motherless children. There were only too many who could quote such cases, some worse ones perhaps.

The man on the land might make a periodical valuation of his live stock and dead to determine his financial position. He would write off a certain amount for depreciation, but which of them would place a valuation on the best asset they had—their women folk—and who would calculate the amount of depreciation brought about by impaired health, often the result of their own thoughtlessness or indifference.

STOCK BEFORE WOMEN.

There were many settlers who went on the land who, to his mind, seemed to start at the wrong end of the job. He knew only too well that funds would not allow them to do all that they would wish, but there were some who seemed to think that, while Dobbin must have a nice warm stable, anything would do for mother and the youngsters until they could get a start, and the start often took so long to accomplish that by the time the nice big new house was built the youngsters had scattered, and mother somehow did not seem to have much appreciation left for her altered circumstances.

He once knew a man who would never leave his horses stand in the dray for 10 minutes without slipping the nosbags on their heads, yet for 20 years his wife milked anything up to half a dozen cows in a bail in the open without a roof of any sort to shield her from the rain and sun. And that was in a timbered country, and within a short distance of enough thatch to cover acres of sheds.

"There isn't much joy in milking cows under any conditions," continued Mr. Davies, "but if it has to be done the least we can do is to see that the yards are kept as clean as possible, and a dry shed provided. A cow when brought in out of the rain can be dried quickly with a hoop-iron bow, but when a further supply keeps falling and running off her on to the unfortunate milker, it is enough to make a person break all the Commandments and kick the cow." Another

of the significant things was the distance from the water tank to the kitchen. Multiply it by the number of times that mother or Mary walked to it and back in a day, and that might help to account for mother or Mary being tired at night. Perhaps, with a bit of piping, a lot of walking might be avoided. Then there was the position of the clothes lines. He had seen them erected in the big yard, and when Tom or Dick come in with the horses and let them go for a drink they rolled and kicked up as much dirt as a Broken Hill storm, and then went and rubbed their backs on mother's clean sheets and Sunday-best tablecloth. Convenient appointments in the wash-house and woodshed were very necessary. No woman should ever have to cut the house wood, except in extreme cases.

THE LOVE OF FLOWERS.

To 99 per cent. of the women folk a home without some sort of a flower garden was lacking in one important feature. Personally, he preferred to see a small well-kept garden to a large space, well stocked with weeds, which never looked tidy, and in which a woman might work herself to death without achieving any satisfactory results. Having decided on the extent of the garden, it was most important to make the fence around it secure enough to prevent the animals from helping themselves to a dessert of flowers or the hens making their nests under some nice hardy shrub.

Nothing was more discouraging than to plant and care for some choice flowers and to find that the labor of love had been in vain, owing to man's neglect. Some men had a decided aversion to do anything on a Sunday, except enjoying a good dinner, and take what they considered to be a well-earned rest for the afternoon; but did they not forget that the house that seemed so inviting to them had been the scene of mother's and Mary's labors all the week, and a little outing occasionally was very pleasant to them. They liked to go out with father better than with any one else—at least, mother did. "So, instead of having that sleep," counselled Mr. Davies, "put old Dobbin in the trap, or run out the old Ford, and take her for a joy ride to give her fresh heart for the next week. Don't think I am throwing stones under the impression that I am without sin. I recognise my own shortcomings in many ways; but I do hope that something that I have said may at least result in there being joy among these angels over one sinner that repenteth."

ADVISORY BOARD OF AGRICULTURE

The monthly meeting of the Advisory Board of Agriculture was held on Wednesday, October 15th, there being present Mr. W. S. Kelly (Chairman), Captain S. A. White (Vice-Chairman), Messrs. L. Cowan, B.Sc. (Agric.), J. W. Sandford, A. M. Dawkins, A. B. Feuerheerdt, and the Secretary (Mr. H. J. Finnis). Apologies were received from Professor Arthur J. Perkins, Hon. W. G. Duncan, Messrs. C. J. Tuckwell, H. Wicks, and Geo. Jeffrey.

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(Late of Federal Taxation Dept.)

Experimental Plot for Tantanoola.—The Tantanoola Branch requested that an experimental plot might be established in that locality for the purpose of utilising waste water for irrigation purposes. The Director of Agriculture (Professor Arthur J. Perkins), in reporting on the request, said it would be impossible for the department to carry out work in a new centre under complete departmental responsibility; on the other hand, if farmers were available for the purpose and willing to co-operate with the department, the department would be quite prepared to supply designs for work of that kind and to associate itself with the experiments to the extent of providing seed and manure, as was the case for other experimental work carried out with farmers. The difficulty was represented in rather considerable capital outlay in pumping appliances, cost of levelling, channels, &c., all of which presumably would have to be met by the land owner, who would have the benefit of whatever crops were collected. The secretary was instructed to forward a copy of the director's report to the Branch, and also to ask whether the Branch could suggest any farmer in the district who would be likely to undertake the work.

Protection of Trees on Road Sides.—The following resolution was submitted by the Advisory Board to the Minister of Agriculture:—“That in the opinion of the Advisory Board of Agriculture it is desirable that all trees growing on the side of any road not being on private land should be subject to the control of the Forest Department, whether or not moneys have been contributed out of the public revenues to the planting of such trees, and that it should not be lawful for any person or public body under any circumstances to cut down, damage, or remove any such tree except under the authority of a permit generally or specially issued by the Department, to such person or public body.” The resolution was returned by the Minister with the statement that he did not think it necessary to adopt the Board's suggestion that the resolution might be brought under the notice of the recently appointed Advisory Board of Main Road Tree Planting.

Appointment of a Board of Forestry.—Information was received from the Government that it did not approve of the appointment of an Advisory Board of Forestry. It was decided that a committee, consisting of Captain White, Messrs. J. Sandford, F. Coleman, and A. Feuerheerdt, should wait on the Minister.

Appointment of a Plant Breeder.—The resolution of the Conference of upper northern Branches, urging the appointment of a plant breeder to the staff of the Department of Agriculture, which had been forwarded to the Minister of Agriculture by the Board, was returned, with an intimation that the Minister did not approve.

Prices of Barley.—At the Conference of Kangaroo Island Branches held on June 9th a resolution was carried asking that the Government should secure from London during the months of December, January, and February, weekly cable advices of barley prices. An intimation was received from the Minister that arrangements would be made to give effect to the resolution.

1924 Congress Resolutions.—The following resolutions from the 35th Annual Congress of the Agricultural Bureau were dealt with:—
(a) "That this Congress of the Agricultural Bureau, in response to the Minister of Agriculture's request, has given consideration to the suggestion submitted in his opening address, and begs to submit the following resolutions—(1) 'That this Congress considers that it would be decidedly detrimental to the agricultural interests of the State, as well as to the Agricultural Bureau system, to abolish the Congress, which has been annually held during the past 35 years, or interfere with the existing arrangements in connection therewith;' (2) 'that this Congress is fully impressed with the value of experimental farms to the agricultural industry, and views with disfavor any attempt to reduce their numbers;' (3) 'that this Congress considers it of the utmost importance that more travelling instructors in agriculture should be appointed to the staff of the Department of Agriculture.' " It was decided to forward the matter to the Minister, pointing out that the Board concurred with the opinions expressed in the resolutions. (b) "That the work of the Meteorological Department in South Australia be made more valuable to the producer, especially in the fruit-growing districts on the River Murray and during the drying season, by expediting the dispatch and posting up at post offices of weather forecasts and by establishing official climatological stations at suitable centres on the River Murray." It was decided to forward the resolution to the Minister with a request that the matter might be forwarded to the Meteorological Department. (c) "That Congress again bring before the notice of the Government the necessity for the compulsory registration of stallions, and urge the elimination of all unsound animals." It was decided to forward the resolution to the Minister with the recommendation that steps should be taken to give effect to the resolution. (d) "That in replies to urgent inquiries of sickness in animals the Department be empowered to purchase what medicines are necessary if requested, and forward same to person inquiring, thus saving time and giving animals a better chance by obtaining medicines sooner, parcels being made payable on delivery at the post office." The secretary reported that arrangements were being made to give effect to this resolution. (e) (Women's Session) "That this Congress regrets that the proposed rural domestic science course has not yet been held, and hopes that in the near future it will be carried out, feeling sure that it will be greatly appreciated and that support will be available from the women of the country." The Board decided to communicate the resolution to the Minister of Agriculture.

A committee, consisting of the Chairman, the Director of Agriculture, the Principal of the Roseworthy Agricultural College, and the Secretary, was appointed to consider other resolutions carried at the 1924 Congress, and to report to the Board at a subsequent meeting.

Conference Resolutions.—At the 1924 Minnipa Conference it was resolved:— (a) "That following the intimation of the Honorable the Minister of Agriculture to the effect that the Government would consider the granting of monetary aid to farmers on Eyre Peninsula to secure qualified veterinary assistance, this Conference respectfully

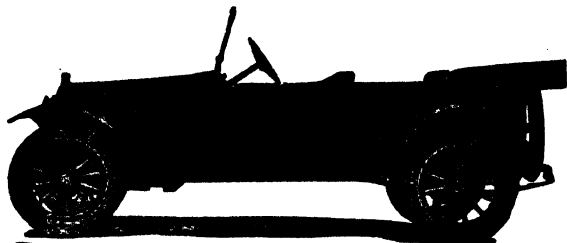
requests the Honorable the Minister to determine at an early date the conditions under which such aid will be granted." It was decided to bring this request under the notice of the Minister of Agriculture. (b) "That the Government be asked to connect the Government farm with the local telephone exchange." The secretary was instructed to forward the resolution to the Minister with the support of the Board.

Preservation of Trees on Murray Banks.—A communication was received from Mr. T. Bolten dealing with the utilisation of the trees along the banks of the River Murray for agricultural purposes. The Secretary was instructed to thank Mr. Bolten for bringing the matter under the notice of the Board.

Life Members.—The names of Messrs. G. A. Vigars (Mount Hope Branch) and T. H. Price (Paskeville Branch) were added to the roll of life members of the Agricultural Bureau.

New Branch.—Approval was given for the formation of a Branch of the Agricultural Bureau at Penneshaw, with the following gentlemen as foundation members:—F. Lashman, R. Jackson, F., S., A., and H. Wilson, W. and D. Buick, T. Lyall, S., H., and F. Veave, H. Davey, E. L. and E. S. Bates, S. McArthur, F. Trethewey, and A. and R. Howard.

New Members.—The following names were added to the rolls of existing Branches:—Penola—H. R. Golder; Cygnet River—S. Wakelin, P. Wakelin; Light's Pass—W. A. Tuohy, P. A. Scholz, R. Radford, W. John; Balhannah—F. Moulden, F. Snoxall; Salisbury—W. E. Banks; Brinkworth—R. H. Freeman, E. A. Niske, J. S. Weckert; Narrung—F. C. Crouch, C. G. Bell, P. G. Palfrey, C. J. H. Sims, F. Lodge, E. Lindquist, K. Bakewell, D. Bakewell; Poochera—T. King; Murray Town—G. Jackson, H. Phillis, A. Hill, J. Cobiack, E. Scott; Parilla Well—A. J. Arnold, C. Kretschner; Tweedvale—J. G. Schaepel; Wirrabara—G. Cleggett; Mannanarie—H. McDonald; Saddleworth—C. Willford; Miltalie—A. C. Beinke; Kringin—R. J. Lownz; Gladstone—J. Gale, N. Col; Paruna—D. Bignell; Redhill—N. Hancox; Port Elliot—A. C. Newell, A. J. Humberstone; Tatiara—R. Langley; Nelshaby—J. Engstrom, W. Richardson; Claypan Bore—F. J. H. Hamon, L. Hosking; Monarto South—Martin Nolan, Michael Nolan; Barmera—J. Bartsch; Streaky Bay—T. Mudge, R. J. Mudge; Strathalbyn—L. Beare, L. E. Stirling, C. Tipping; Laura—F. Reusch; Mount Bryan—L. Fleming; Two Wells—K. H. Shepley; Shoal Bay—R. W. Chapman; Clanfield—H. B. White, C. D. White, T. Lench, P. O'Driscoll, P. Masters, jun., S. Orwell; Saddleworth Women's—Miss D. Partridge, Mrs. L. E. Abbott; Balaklava—C. Marriott, H. H. Goldney, J. D. Hill; Lenswood and Forest Range—K. Caldicott; Artherton—H. K. Frost, T. H. Allan, J. Walding; Minnipa—J. O'Callaghan; Waikerie—C. W. Gosling; Lameroo—A. V. Ivett, C. Crispe; Younghusband—A. Lahne, M. R. Mann; Tantanoola—T. H. Harper; Rapid Bay—M. F. Sells; Glencoe—A. Guerin, L. E. Flett, P. S. Mitchell; Edillilie—M. A. Palm, T. Johns, G. Reimann; Pinnaroo—F. J. S. Welham; Renmark—P. A. Wyatt; Paskeville—E. McW. Pontifex; Taplan—R. W. Whan; Black Springs—P. A. Smith, V. C. Gilbert, C. E. Klingberg.



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AGRICULTURAL BUREAU.

CONFERENCE AT MINNIPA.

The sixth Annual Conference of Eyre Peninsula Branches of the Agricultural Bureau was held at the Government Experimental Farm, Minnipa, on Thursday and Friday, September 25th and 26th, 1924. The Department of Agriculture was represented by the following:—Hon. T. Butterfield, M.P. (Minister of Agriculture), Messrs. J. W. Sandford, P. H. Jones, and A. B. Feuerheerdt (Members of the Advisory Board of Agriculture), Professor A. J. Perkins (Director of Agriculture), Mr. W. J. Colebatch, B.Sc. (Agric.), M.R.C.V.S. (Principal of the Roseworthy Agricultural College), Mr. A. H. Robin, B.V.Sc. (Government Veterinary Officer), Mr. R. Hill (Manager of the Minnipa Experimental Farm), and Mr. H. J. Finnis (Secretary Advisory Board of Agriculture). There was an attendance of about 200 visitors and delegates from the following Branches and districts:—Green Patch, Yeelanna, Minnipa, Wudinna, Cungena, Wirrulla, Petina, Smoky Bay, Pygery, Yaninee, Maltee, Poochera, Nunjikipita, Goode, and Laura Bay.

Mr. W. Williams, of the Minnipa Branch, presided over the gathering. The opening address was delivered by the Minister of Agriculture (Hon. T. Butterfield, M.P.).

FALLOWING.

Mr. R. G. Hicks, of the Yaninee Branch, read a paper, "Best Methods of Fallowing for Central and Northern Eyre Peninsula." He considered that fallowing, if only for the conservation of moisture, was very necessary. Early fallowing was not suitable for the loose-textured soils of the Peninsula. He advocated ploughing fairly late in the winter. The cost of early fallowing was greater because of the greater depth of ploughing needed. Also, by fallowing early, valuable feed was turned under, which would otherwise be very useful for grazing stock. He suggested August and September as the best months for fallowing. Cultivation would be necessary to destroy weeds and maintain a good surface mulch, whilst subsequent harrowing would prove useful to destroy small weeds. He recommended the use of the tractor in all operations connected with fallowing, because the work could be done more expeditiously than with horses. Finally, he urged all farmers on the Peninsula to put a larger area of land under fallow. The Chief Agricultural Instructor (Mr. W. J. Spafford), in discussing the paper, said the object of fallowing was not mainly the conservation of moisture, but to enable the farmer to have a larger area of land ready for the drill. Another object was to obviate using expensive manures. A further point was the opportunity which it gave the farmer to prepare a seed bed properly. The statement that early fallowing was more expensive than late fallowing

was contrary to experience in this State. Early ploughing was better than late ploughing.

VEGETABLE AND ANIMAL DISEASES.

Mr. E. M. Sage (Green Patch) then read a paper, "The Need for Better Facilities for Obtaining Information on Animal and Vegetable Diseases." The writer pointed out the difficulties that producers had to face through a lack of money and technical officers to investigate obscure diseases. He then moved, "That the Government should be asked to take steps to provide for the systematic investigation of animal and plant diseases." The motion was seconded by Mr. R. G. Hicks (Yaninee), and carried.

CO-OPERATIVE WHEAT HANDLING.

Mr. J. M. Head (Minnipa), in the course of a paper dealing with the subject, "Co-operative Marketing and Handling of Wheat," expressed the opinion that the voluntary wheat pool had not received sufficient support from producers. Without the voluntary pool wheat-growers would have been in as bad a position as they would have been without the compulsory pool during the war. With a co-operative concern handling all of the grain grown in Australia, the producers would be in a position to control the market for home consumption, and with one shipping agency for the whole of the export wheat, competition would be aroused between the ship-owners for freight contracts. Moreover, they would be in a position to hold the grain and place it on the market at the most opportune time. An interesting discussion followed, in which each speaker supported the voluntary pool.

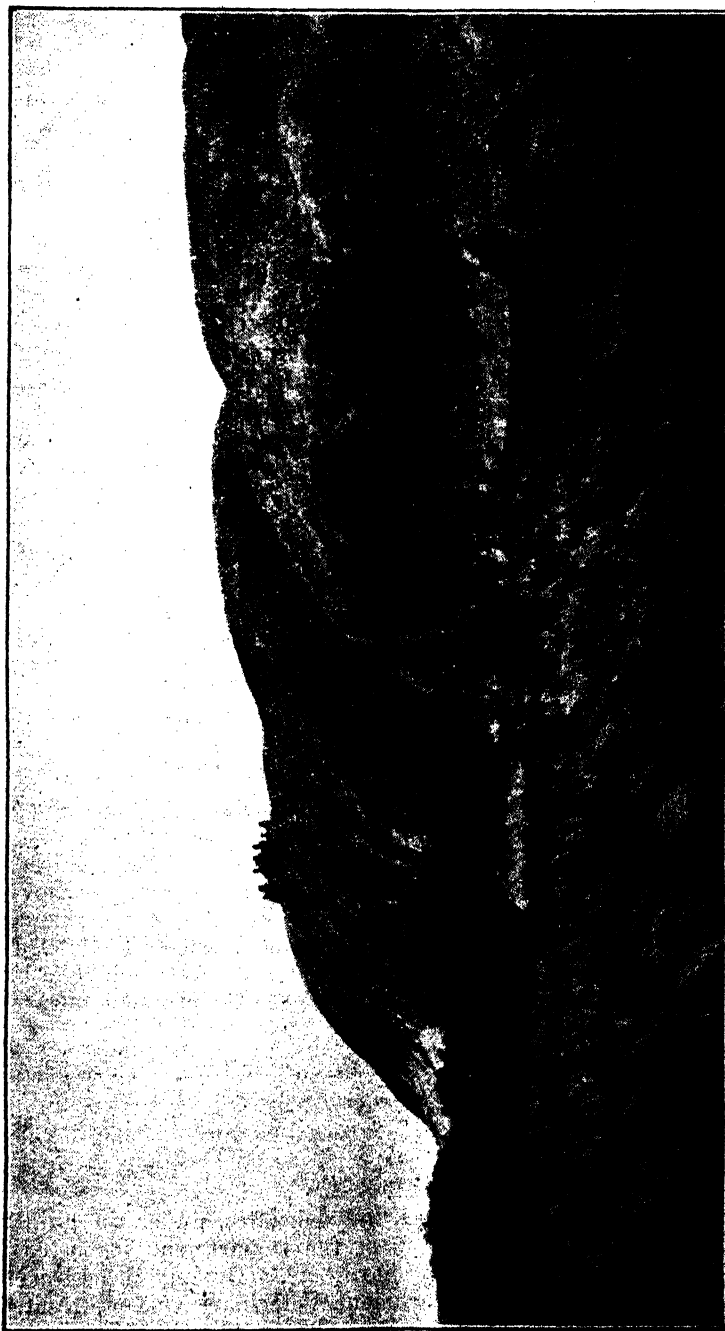
RESOLUTIONS.

During the session devoted to Free Parliament the following resolutions were carried:—At the instance of Mr. T. Nottle (Minnipa), seconded by Mr. W. Schultz (Petina), "That the Department be asked to provide an assistant to the Manager of the Government Experimental Farm, Minnipa, and so allow the Manager to spend more time amongst the farmers on the Peninsula." Moved by Mr. E. Turley (Minnipa), seconded by Mr. J. Bascomb (Petina), "That the Government be asked to connect the Government farm with the local telephone exchange."

On Thursday evening the Director of Agriculture (Professor A. J. Perkins) delivered an address, "The Association of Live Stock and Cropping on Mallee Farms."

FARM INSPECTION.

On Friday morning the visitors and delegates, under the guidance of the Farm Manager and Officers of the Department, inspected the crops, experimental plots, and orchard, &c. During the afternoon Mr. A. H. Robin, B.V.Sc. (Government Veterinary Officer) treated a number of veterinary cases and gave a short address.



The Yarwoodia Rock, Minnape, the Water Catchment Area for the Supply of the Government Experimental Farm.



The Yarwondutta Rocks, showing the Dwarf Wall Around the Base of the Rocks, Which Directs Water to the Underground Tank, to the Right of the Picture.

CROP COMPETITIONS.

The Secretary of the Advisory Board of Agriculture (Mr. H. J. Finnis) addressed the gathering on the Government's scheme for the encouragement of Crop Competitions. After discussion, it was decided, on the motion of Mr. H. Scholz (Yaninee), "That Crop Competitions on the lines suggested by the Advisory Board should be inaugurated in the county of Le Hunte." It was also decided that each Branch of the Bureau in the county of Le Hunte should appoint one member to act as a committee of management.

SOLDIER SETTLEMENT.

The session of Friday evening was opened with a paper contributed by Mr. R. Visser, "How to Settle Men on the Land." He was of the opinion that much could be done by the Government to assist men to settle on the land. His suggestions were that the Government should revise the Burning and Fencing Acts, clear 200 acres of land ready for the plough, allow the settler seed and super for the first year, and also 1 ton of barbed or plain wire. A shed and tanks should be erected on the property, and the block of land should be free of interest for the first five years. If some such scheme were put into force the man with a moderate capital would be able to battle along and would be able to pay back to the Government with interest the money that had been advanced.

WHITE WHEATS OR RED.

Replying to Mr. G. Smart (Minnipa), the Chief Agricultural Instructor (Mr. W. J. Spafford) said it had definitely been decided by the corn and grain trade in Adelaide, and all wheat agents had been informed, that any red wheats marketed during the coming harvest would be subjected to a dock of 2d. per bushel. Red wheats grown in South Australia consisted of the following varieties:—King's Red, King's Early, Red Russian, Cedar, and Marquis, but they were wheats that could easily be replaced by King's White, Sultan, Felix, Baroota Wonder, Walker's Wonder, Silver Baart, and Gluyas.

RABBIT DESTRUCTION.

Mr. J. Head (Minnipa) initiated a discussion on the subject, "Destruction of Rabbits during the Winter Months." Mr. C. Scholz (Yaninee) said some of the latest fumigating machines which had been placed on the market were very effective, and could be bought for about £8. Farmers in their district had co-operated and purchased a fumigating plant, and the scheme had proved most successful. Messrs. J. Mitchell and E. Turley, of Minnipa, both referred to the very good results they had had with the Suddeth fumigator.

SEED WHEAT PRICES.

Mr. W. Schulz (Petina) introduced a discussion on the subject of the price of seed wheat and Government farms. He pointed out that last year 6s. was charged at the Government farms for seed wheat, whilst the market price of wheat was only 4s., and thought 4s.,

plus the cost of grading, would be a fair charge for the seed. The Director of Agriculture (Professor A. J. Perkins), in dealing with the question, pointed out the work that was involved in keeping varieties of wheat pure and true to type. The drills and harvesting machinery had to be cleaned out very carefully after each variety had been dealt with, the wheat had to be handled a good number of times, and from a bag of wheat taken from the harvester, only about three parts of a bag of good clean seed was obtained. The price for seed wheat had to be fixed some time ahead of harvesting, and whilst it was true that last year the price fell, it was just as likely that the price of wheat would rise, and if that did happen the price could not be altered by the department after it had once been fixed. He could confidently assure them that a price of 2s. above market price for seed wheat was not a paying proposition, and that it was not an excessive price.

PICKLING WHEAT.

Mr. E. Turley (Minnipa) introduced for discussion the subject. "Pickling of Wheat." He did so mainly with the idea of hearing something about dry pickling methods, because he said in a few years' time wet pickling would be a thing of the past. Mr. R. Hill (Manager of the farm) said that a number of pickling tests were being carried out on the farm, but they had not yet been under review for a sufficient length of time to permit one to form definite opinions. Experiments had been conducted with seed treated with formalin, bluestone, dry copper carbonate, and "Farmers' Friend." Last year untreated seed came away about the same time as seed treated with copper carbonate and "Farmers' Friend." The last-named made a wonderfully strong growth for about six weeks, after which time the other plots caught up. The bluestone and formalin pickled plots came away together and were considerably behind the other plots. The untreated plot showed smut, the copper carbonate plot showed very little evidence of disease, the grain treated with "Farmers' Friend" had traces of smut, whilst the plot treated with formalin was freest from smut. Bluestone treated seed had the most smut.

VETERINARY SURGEON FOR EYRE PENINSULA.

Mr. W. Schulz (Petina) moved, and Mr. W. Stone (Wirrulla) seconded, the following resolution:—"Following the intimation of the Honorable the Minister of Agriculture to the effect that the Government would consider the granting of monetary aid to farmers on Eyre Peninsula, to secure qualified veterinary assistance, this Conference respectfully requests the Honorable the Minister to determine at an early date the conditions under which such aid will be granted." The motion was carried unanimously.

The Conference closed with votes of thanks to the visiting Officers, Manager of the Experimental Farm, and the chairman.

ORCHARD NOTES FOR SOUTHERN DISTRICTS FOR NOVEMBER, 1924.

[By C. H. BEAUMONT, Orchard Instructor and Inspector.]

The principal work for the month will be to follow up the spraying to control insect and fungus pests. To get a good result with arsenate of lead for apples and pears, the fruit must be kept covered with a film of spray. This is more easy when a spreader is used. A very large grower in Victoria, quoting his experience last year, says he sprayed his fruit four times up to December, and again in January, using the casein spreader, and 200 acres of apples which previously were badly affected showed only 10 per cent. of punctures, many blocks of apples showing only 1 to 2 per cent. The number of grubs which penetrated the skin was about one in 1,000. Use lime sulphur or wettable sulphur for scab.

Rub off young shoots that are not wanted, whether about big cuts or grafts. Keep the cultivator at work; soil should be kept loose. Cases and trays should be in readiness. If you have good cherries try packing them in punnets. Apricots and peaches should be in trays; these fruits are too soft to be packed in bushel cases. Have drying trays and equipment ready in case it is necessary to dry some of the soft fruits. Grade your fruit.

Vines should be watched for "downy mildew." Bordeaux mixture with a spreader is the preventive. The time to cinch vines is just as the caps are falling from the blossoms. Do not cinch weak vines; give them a chance to grow strong.

Brown rot of citrus trees will need watching; fallen affected fruit must be gathered and destroyed; neglect of this precaution means additional trouble next year. Keep limbs off the ground. In New Zealand the use of sulphate of iron on the soil is recommended for lessening brown rot; 2lbs. to 3lbs., pulverised, and forked into feeding roots.

Fruit in cool store will need careful attention.

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IMPORTS AND EXPORTS OF FRUITS, PLANTS, ETC., SEPTEMBER, 1924.

IMPORTS.

Interstate.

Apples (bushels)	24
Bananas (bushels)	14,121
Oranges (bushels)	18
Passion fruit (bushels)	553
Paw paws (bushels)	3
Pineapples (bushels)	797
Tomatoes (bushels)	2
Cucumbers (bushels)	4
Nuts (packages)	4
Potatoes (bags)	17,761
Bulbs (packages)	1
Plants (packages)	9
Trees (packages)	35
Wine casks (empty)	3,719

Fumigated—26 packages trees and 94 wine casks.

Rejected—1 bushel bananas, 5 bushels oranges, 3 bushels paw paws, 16 secondhand bags, 18 secondhand cases, and 86 secondhand crates.

Overseas.

Federal Quarantine Act.

1,590 packages seeds, etc.

EXPORTS.

Federal Commerce Act.

3,257 packages citrus fruit, 662 packages other fresh fruit, 31,148 packages dried fruit, 1 package seeds, 117 packages vegetables were exported to overseas markets. These were consigned as follows:—

London.

Dried fruit	26,592
Oranges	3

South Africa.

Dried fruit	1,230
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New Zealand.

Citrus fruit	3,254
Dried fruit	2,115
Seeds	1

India and East.

Dried fruit	211
Apples	662
Potatoes	117

Vancouver.

Dried fruit	1,000
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MOUNT GAMBIER AND DISTRICT HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR SEPTEMBER, 1924.

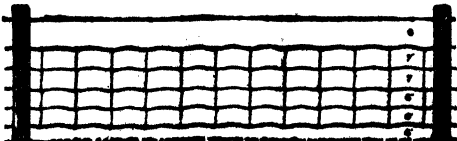
Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during Sept.	Per Cow during Sept.	Per Cow August to Sept.	Per Herd during Sept.	Per Cow during Sept.	Per Cow August to Sept.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
2/K	25.37	14.07	11,547.5	455.16	963.57	466.92	18.40	39.02
2/L	20	17.50	11,577	578.85	973.03	508.26	25.41	43.17
2/V	22.90	10.47	8,362.5	363.22	615.03	343.87	14.92	26.30
2/Y	12.57	10.70	11,521.5	916.59	1,575.66	470.82	37.46	63.79
2/DD	15.97	14.20	14,839	929.18	1,901.51	668.15	41.84	86.00
2/EE	7.67	7.00	6,880	897.00	1,517.00	328.01	42.50	70.11
2/FF	10	9.23	9,224	922.40	1,700.85	432.70	43.27	75.22
2/GG	10.03	9.87	7,285	726.32	1,408.49	295.09	29.42	57.80
2/HH	10.17	8.83	8,456	831.47	1,632.32	336.90	33.13	63.38
2/II	10.33	10.17	10,440	1,010.65	1,671.15	447.62	43.33	73.96
2/JJ	28	22.00	15,840	565.71	—	632.79	22.60	—
Means	15.73	12.19	10,542.95	670.32	1,255.36	448.10	28.49	53.46

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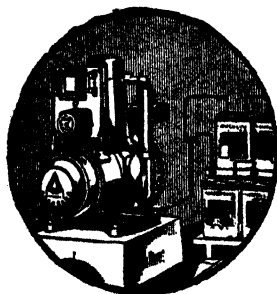
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GLENCOE HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR SEPTEMBER, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during Sept.	Per Cow during Sept.	Per Cow October to Sept.	Per Herd during Sept.	Per Cow during Sept.	Per Cow October to Sept.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
3/A	18-53	14-03	14,027	756-98	8,216-81	575-99	31-08	346-45
3/B	16-4	6-33	3,378	205-97	3,575-93	140-57	8-57	155-87
3/C	11-07	8-63	9,215	832-43	7,858-71	342-89	30-97	317-38
3/D	12-20	6-93	4,198-5	344-14	6,163-96	161-98	13-28	238-91
3/E	14-80	12-53	10,819-5	731-05	6,786-66	419-82	28-37	291-92
3/F	10-87	8-87	6,242	574-24	6,154-83	242-92	22-35	253-89
3/G	11	7-67	5,355	486-82	6,517-03	186-66	16-97	251-07
3/H	16	12-57	11,160	697-50	5,685-55	425-02	26-56	223-57
3/I	12-10	5-40	4,451	367-85	5,440-30	173-11	14-31	232-67
3/J	19-17	7-40	4,384	215-81	3,820-35	175-80	8-61	172-92
3/K	21-30	12-43	11,838	555-77	6,055-06	487-66	22-89	256-19
3/L	25-17	21-17	17,332-5	688-62	5,700-95	703-15	27-94	243-11
3/M	12-03	7-53	4,679-5	388-97	4,791-90	178-91	14-87	205-53
3/N	16-80	12-70	8,799-5	523-78	5,790-55	374-17	22-27	249-46
3/O	16-53	7-97	5,958	367-22	4,399-77	209-03	12-95	167-87
3/P	17	11-57	7,963-5	458-75	3,626-07	309-21	17-81	144-23
3/Q	47-27	25-93	22,758	481-44	4,997-08	864-57	18-29	207-70
3/R	17-50	15-27	15,410	881-01	7,796-57	671-57	38-39	340-86
Means	17-54	11-39	9,331-61	531-99	5,682-74	369-06	21-04	237-56



DELCO-LIGHT

The complete Electric Light and Power Plant

USED IN EVERY CLASS OF HOME, BUSINESS AND PUBLIC BUILDING.

CHEAPER—BETTER—SAFER.

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MILANG HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS, SEPTEMBER, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during Sept.	Per Cow during Sept.	Per Cow May to Sept.	Per Herd during Sept.	Per Cow during Sept.	Per Cow May to Sept.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
4/A	27	26-93	13,683	506-78	2,548-73	578-80	21-44	109-91
4/B	41	34-77	25,057	611-15	2,288-21	1,094-60	26-70	87-10
4/C	29	23-03	12,231	421-76	1,687-23	483-38	16-67	66-06
4/D	23	22-03	23,010	1,000-43	4,008-69	872-95	37-95	151-02
4/E	20	18-10	9,477	473-85	2,485-79	352-96	17-65	92-86
4/F	20	18	8,730	436-50	2,058-45	356-96	17-85	87-83
4/G	27	22	14,400	533-33	2,109-39	561-55	20-80	81-03
4/H	26-13	19-93	13,915	532-53	2,188-34	556-09	21-28	92-38
4/I	25-07	21-33	13,030-5	519-76	1,904-27	587-49	23-43	81-94
4/J	54-47	40-87	31,084-5	570-67	1,648-29	1,167-57	21-44	59-47
4/K	16	14-83	7,325	457-81	2,038-78	308-35	19-27	88-60
4/L	32	28-13	12,527-5	391-48	1,818-60	572-88	17-90	82-85
4/M	22	20-53	12,757-5	579-89	2,067-75	502-62	22-85	80-65
4/N	43	40	30,795	716-16	3,058-22	1,231-05	28-63	118-35
4/O	42-17	42-17	33,110	785-15	3,560-57	1,360-68	32-27	144-06
4/P	56-30	40-50	23,206-5	412-19	1,158-24	862-18	15-31	43-68
4/Q	47-77	31-17	22,024	461-04	1,783-17	878-18	18-38	70-26
4/R	15	12-17	10,738-5	715-90	2,518-79	508-91	33-93	113-81
4/S	21	20	10,515	500-71	903-83	471-19	22-44	41
Means	30-94	26-13	17,243	557-26	2,229-56	700-44	22-64	89-22

APPOINT THE—
EXECUTOR TRUSTEE AND AGENCY COMPANY

OF SOUTH AUSTRALIA, LIMITED,

Executor and Trustee of Your Will.

Established, 1890. Estates and Trust Funds £8,000,000. Write for our Booklet.

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 Manager

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22 GRENFELL STREET - - - ADELAIDE.

RIVER MURRAY HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS, SEPTEMBER, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during Sept.	Per Cow during Sept.	Per Cow October to Sept.	Per Herd during Sept.	Per Cow during Sept.	Per Cow October to Sept.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1/C	37-63	35-83	40,397	1,073-53	9,422-80	1,486-08	39-49	365-64
1/J	18	10	7,500	416-67	5,199-83	362-11	20-12	244-72
1/L	18	15-63	13,612-5	757-42	6,901-41	638-98	35-55	311-46
1/M	22-73	17-67	13,407	589-84	5,091-44	735-40	32-35	263-20
1/R	16-33	10-63	7,209	441-45	5,107-65	361-38	22-13	255-51
1/T	14	11-73	7,714	551-00	6,134-27	406-07	29-01	322-35
1/Y	11	8-30	5,998-5	545-32	7,050-84	251-45	22-86	323-80
1/Z	16	12-97	8,798	549-87	6,261-72	413-54	25-85	291-84
1/DD	24-60	21-30	15,201	610-48	6,926-49	681-96	27-39	305-24
1/EE	15-97	10-47	7,481	468-44	6,637-05	313-61	19-64	311-09
1/FF	15	11	9,345	623-00	7,005-09	420-03	28-00	302-04
1/GG	15	7-17	4,380	292-00	7,000-42	200-98	13-40	325-58
1/II	14	13-33	12,758	911-28	8,801-24	531-93	38-00	374-23
1/JJ	12	11	7,410	617-50	6,630-79	351-55	29-30	304-94
1/KK	13	9-67	6,580	506-15	6,963-53	279-88	21-53	307-11
1/MM	26	13-27	8,201	315-42	6,089-38	378-91	14-57	292-96
Means	18-10	13-75	10,999-50	607-79	6,753-62	488-37	26-99	203-29

THE BEST FRUIT

Can only be obtained from Healthy, Thrifty Trees.

TREES FROM THE

BALHANNAH DECIDUOUS NURSERIES

Are bearing heavy crops of first quality fruit in leading fruit-growing centres throughout the Commonwealth.

QUALITY IS MORE THAN A SLOGAN WITH US—IT IS THE KEYSTONE OF OUR BUSINESS.

INQUIRIES SOLICITED.

H. N. WICKS, Proprietor.

POSTAL ADDRESS—BALHANNAH, S. A.

DAIRY AND FARM PRODUCE MARKETS.

A W. Sandford & Co., Limited, reported on November 1st, 1924:—

BUTTER.—Since our last report values for all grades of butter came back towards the end of last month, due to the absence of London buyers, who operated only on a small scale, anticipating lower prices ruling on the London market. With local trade very strong, demand ruled for the choicest 1lb. prints, whilst all consignments of separators, dairies, stores, and collectors' lines found ready sales. At the close of the month values were as follows:—Choicest factory and creamery fresh butter, in bulk, 1s. 3½d.; first grade bulk, 1s. 2½d.; second and third grade bulk, 1s. 0½d. to 1s. 1d., best separators and dairies, 1s. 1½d. to 1s. 3d.; fair quality, 1s. to 1s. 1d.; store and collectors', 11d. to 1s. per lb.

EGGS.—The forwardings each week were very heavy, and were absorbed by the local picklers and pulpers until the last week or so, when buyers from the eastern States operated very freely on this market, and values advanced. Fresh hen, 1s. 0½d. per dozen; duck, 1s. 1½d. per dozen.

CHEESE.—Increasing forwardings have been arriving weekly from the south-eastern factories, which recorded a lowering in values to the extent of ½d. per lb., the reduction being brought about by the lower quotations at which interstate sellers have been offering. Apart from the excellent local sales, good trade has been put through with Western Australia for new makes, values for new makes being 7½d. to 8½d. per lb. for large to loaf; semi-matured and matured, 10d. to 11d. per lb. for large and medium sizes.

HONEY.—Values have been stationary for all grades. For some time past fairly large stocks have been held, but the position has been somewhat relieved by the eastern States purchasing. Already several consignments of the new season's take have come to hand, for which buyers have given preference, and fairly quick sales have been made with these lots. Prime clear extracted, in liquid condition, 4½d. to 4½d.; best quality candied lots, 4½d.; lower grades, 3d. to 3½d.; beeswax, saleable, at 1s. 4d. to 1s. 4½d. per lb.

ALMONDS.—Several fluctuations in prices have occurred in this line, for which there has been a steady demand from both local and interstate purchasers. Kernels have been very short of requirements, and values showed a further advance, Brandis realising 9d. to 9½d.; mixed softshells, 8½d. to 8½d.; hardshells, 4d.; kernels, 1s. 11½d. to 2s. per lb.

BACON.—The trade is having a good call for sides and rolls, the shortage of the latter being relieved by importations, whilst hams are being very keenly sought after at slightly higher rates. Local hams, 1s. 6d.; best factory cured sides, 1s. 3d. to 1s. 3½d.; Hutton's "Pineapple" rolls, 1s. 3d.; Hutton's "Pineapple" sides, 1s. 3d.; Hutton's "Pineapple" middles, 1s. 7d.; Hutton's "Pineapple" hams, 1s. 8d. to 1s. 9d.

LARD.—Steady demand. Hutton's "Pineapple" lard in packets, 10d.; in bulk, 9d. per lb.

LIVE POULTRY.—At our auctions held the bidding experienced was so spirited that supplies were inadequate, although we submitted extensive catalogues. The demand applies to all lines of fowls, whilst turkeys are also in strong request. We advise consignors to forward without delay. Crates obtainable on application. The following rates ruled at our last auction:—Prime roosters, 5s. to 7s. 6d. each; nice conditioned cockerels, 3s. 6d. to 4s. 9d.; poor conditioned cockerels, 2s. 6d. to 3s. 3d.; plump hens, 4s. 6d. to 6s.; medium hens, 3s. to 4s. 3d.; couple of pens lower; geese, 7s. 6d. to 8s. 6d.; ducks, good condition, 5s. to 6s. 6d.; ducks, fair condition, 3s. to 4s. 9d.; turkeys, good to prime condition, 1s. 2d. to 1s. 5d. per lb. live weight; turkeys, fair condition, 1s. to 1s. 1½d. per lb. live weight; turkeys, fattening sorts lower; pigeons, 11½d. each.

POTATOES.—Prime potatoes, at 5s. 6d. to 7s. per cwt. on rail, Mile End.

ONIONS.—Best brown onions, at 32s. per cwt. on rail.

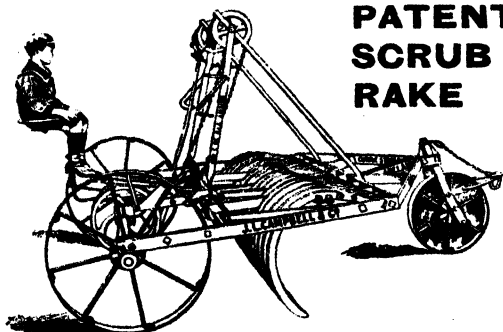
THE AGRICULTURAL OUTLOOK.

REPORTS FOR THE MONTH OF OCTOBER.

The following reports on the general agricultural condition and outlook of the areas represented by the Government Experimental Farms mentioned below have been prepared by the respective managers:—

Kybybolite.—Weather—During the early part of the month conditions were rather cold, but later in month good October weather was experienced. Splendid falls of rain were received, well distributed throughout the month; over 2½ in. were registered, which is above the October average. The total rainfall for the year is so far about 2 in. below the average for the 10 monthly period. Crops are mostly heading very nicely, and promise to give record yields. Practically all classes of cereals and peas are good. Good conditions at the close of month have enabled summer crops to be sown in good order. Subterranean clover has grown very well during the month, and is flowering nicely. Natural feed is very plentiful, especially on land which has been topdressed.

Turretfield.—Weather—This month has been unusually cool, and is noticeable by its many nice falls of rain, which have been of great benefit to the crops. Rain fell on 12 days, and 360 points were registered. The crops have made good improvement, especially the oat crops. Natural feed has kept green, and with the help of the late rains has made good improvement. Stock are in good condition. Pests—Rabbits are fairly numerous throughout the district. Miscellaneous—The vineyards are beginning to shoot, and the cultivation is good. Curl leaf has done much damage to the peach trees.



**PATENT
SCRUB
RAKE**

Takes the place of 15 men. Will rake anything your horses can get over. Also levels the ground and pulls all loose stumps. Any lad can work it. Hundreds now in use, and every Farmer delighted.

**The Improved McGillivray
Patent Rotary Grain Pickler**

WET OR DRY.

As used by Government
Experimental Farm.

This machine is always clean, and ready to put away when finished pickling.
For speed, efficiency, economy, and simplicity, this machine stands alone.

FULL PARTICULARS, &c., FROM SOLE MAKERS—

J. L. CAMPBELL & Coy., 147, Currie Street, Adelaide,
South Australia.
AGRICULTURAL ENGINEERS.

RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of and to the end of October, 1924, also the average precipitation to the end of October, and the average annual rainfall.

Station.	For Oct., 1924.	To end Oct., 1924.	Av'ge To end Oct.	Av'ge. Annual Rainfall
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FAR NORTH AND UPPER NORTH.

Oodnadatta	2.28	4.07	4.14	4.94
Marree	1.81	4.17	4.85	6.07
Farina	2.99	5.33	5.49	6.66
Copley	2.24	5.04	6.99	8.39
Beltana	1.33	3.94	7.46	8.97
Blinman	1.70	5.80	9.71	12.53
Tarcoola	2.32	5.97	6.47	7.74
Hookina	0.84	5.60	11.04	13.46
Hawker	1.14	7.07	11.06	12.92
Wilson	1.23	6.91	9.85	12.58
Gordon	0.77	6.03	9.76	11.55
Quorn	0.94	7.68	12.46	14.21
Port Augusta	1.62	8.20	8.40	9.67
Port Augusta West	1.37	7.34	8.56	9.71
Bruce	0.77	6.30	9.13	10.77
Hammond	0.72	7.67	10.35	11.91
Wilmington	1.11	13.09	16.43	18.29
Willowie	1.71	9.71	12.27	12.67
Melrose	2.26	18.51	21.22	23.40
Booleroo Centre	2.35	13.69	13.67	15.05
Port Germein	1.88	11.89	11.23	12.89
Wirrabara	2.61	17.49	17.29	19.78
Appila	2.35	15.96	12.89	15.00
Craddock	1.01	5.03	8.90	11.52
Carrieton	1.21	6.55	11.08	12.90
Johnburg	1.49	6.48	9.25	10.91
Eurelia	1.11	7.11	11.70	13.54
Orroroo	1.43	8.16	11.89	13.73
Naackara	0.94	7.26	10.21	11.99
Black Rock	1.92	9.26	11.00	12.75
Ucoita	1.12	6.16	10.27	12.04
Peterborough	3.86	14.72	11.59	13.53
Yongala	4.02	16.11	12.60	14.58

LOWER NORTH-EAST.

Yunta	1.32	4.71	7.37	8.38
Waukaranga	0.58	4.27	6.16	8.54
Mannahill	0.99	5.52	7.20	8.67
Cockburn	0.65	4.19	6.85	8.31
Broken Hill, N.S.W.	0.44	3.90	8.45	9.98

LOWER NORTH.

Port Pirie	2.07	13.18	11.98	13.55
Port Broughton	1.10	13.33	12.95	14.29
Bute	1.12	13.70	14.39	15.78
Laura	3.56	18.89	16.44	18.26
Caltowie	1.42	16.51	14.20	17.20
Jamestown	2.65	20.13	15.79	17.89
Gladstone	1.59	20.68	14.42	16.29
Crystal Brook	1.77	19.46	14.20	15.95
Georgetown	1.90	20.92	16.62	18.55
Narriady	1.08	14.27	14.62	16.37
Redhill	1.35	14.06	15.53	16.94

LOWER NORTH—continued.

Spalding	3.80	19.24	17.73	20.27
Gulnare	1.78	20.34	17.23	19.36
Yacka	1.75	17.29	13.81	15.48
Koolunga	1.35	14.75	14.19	15.89
Snowtown	1.51	14.02	14.46	16.07
Brinkworth	1.73	15.48	14.49	16.30
Blyth	2.37	18.08	15.19	17.08
Clare	3.23	25.32	21.33	24.68
Mintaro	2.73	23.07	21.52	23.57
Watervale	3.24	25.00	22.94	27.54
Auburn	3.11	20.21	20.20	24.35
Hoyleton	2.68	14.83	15.84	17.91
Balaklava	1.38	12.26	14.28	15.95
Port Wakefield	1.64	12.44	11.97	13.28
Terowie	1.88	13.91	11.70	13.82
Yarcowie	1.17	9.48	12.40	14.22
Hallett	2.41	16.97	14.46	16.49
Mount Bryan	1.76	17.61	13.99	16.81
Kooringa	2.21	17.20	16.23	18.09
Farrell's Flat	1.86	17.90	17.12	19.00

WEST OF MURRAY RANG.

Manoora	1.88	18.13	17.20	18.93
Saddleworth	2.11	17.50	18.72	19.78
Marrabel	1.96	18.37	17.88	19.78
Riverton	2.34	20.61	18.70	20.79
Tarlee	1.75	18.08	16.13	17.93
Stockport	2.25	17.19	14.93	16.63
Hamley Bridge	2.09	16.73	14.91	16.59
Kapunda	3.03	20.36	17.90	19.89
Freeling	2.88	16.44	16.15	17.99
Greenock	2.75	21.60	19.51	21.68
Truro	3.37	21.72	18.31	20.22
Stockwell	3.27	21.62	18.22	20.32
Nuriootpa	2.73	17.56	18.90	21.00
Angaston	4.36	22.73	20.31	22.53
Tanunda	3.63	20.87	20.15	22.24
Lyndoch	4.09	24.60	21.12	22.93
Williamstown	4.43	25.54	25.23	27.48

ADELAIDE PLAINS.

Mallala	2.81	17.06	15.17	16.72
Roseworthy	2.84	17.86	15.70	17.35
Gawler	2.62	19.91	17.27	19.11
Two Wells	3.17	17.41	14.37	18.89
Virginia	2.15	16.89	15.53	17.32
Smithfield	2.37	19.07	15.63	17.24
Salisbury	2.55	18.71	16.81	18.51
North Adelaide	2.64	25.44	19.66	22.37
Adelaide	2.00	21.23	19.03	21.08
Glenelg	2.06	20.28	16.82	18.45
Brighton	2.25	20.14	19.51	21.37
Mitcham	2.39	23.78	22.24	24.26
Glen Osmond	2.12	25.55	23.87	25.94
Magill	2.94	27.88	22.04	25.35

RAINFALL—continued.

Station.	For Oct., 1924.	To end Oct., 1924.	A'v'ge To end Oct.	A'v'ge Annual Rainfall
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MOUNT LOFTY RANGES.

Teetree Gully.....	2-87	27-66	25-44	27-77
Stirling West	4-20	43-62	41-59	46-82
Uraidla	4-76	41-95	41-05	44-23
Clarendon	3-57	27-57	31-26	33-09
Morphett Vale ...	2-12	21-42	20-90	22-90
Noarlunga	2-08	20-50	18-75	20-41
Willunga	2-40	24-67	23-90	25-99
Aldinga	2-01	19-06	18-72	20-44
Myponga.....	2-30	26-09	27-63	29-80
Normanville	1-66	20-69	19-08	30-70
Yankalilla.....	2-18	21-27	21-60	23-31
Mount Pleasant ..	4-23	23-79	25-23	27-28
Birdwood	3-58	24-83	27-13	29-39
Gumeracha	4-24	31-98	30-65	33-36
Millbrook Reservoir	3-08	33-94	34-92	36-21
Tweedvale	3-52	34-27	33-14	35-65
Woodside	3-85	31-81	29-31	32-20
Ambleside	3-82	32-81	32-21	34-82
Nairne	3-82	25-72	26-41	28-44
Mount Barker	4-83	29-43	26-79	31-30
Echunga	4-46	31-01	30-58	33-06
Macclesfield	4-05	26-58	29-13	30-65
Meadows	4-58	32-60	33-29	36-19
Strathalbyn	3-63	19-50	17-47	19-37

MURRAY FLATS AND VALLEY.

Meningie	2-37	19-11	17-15	18-74
Milang	2-20	12-84	13-86	15-45
Langhorne's Creek ..	2-59	14-92	13-15	14-77
Wellington	2-22	15-26	12-89	14-80
Tallem Bend	2-70	16-37	13-18	14-68
Murray Bridge ...	2-83	14-44	12-33	13-94
Callington	3-17	14-89	13-90	15-49
Mannum	1-91	11-05	10-29	11-66
Palmer	2-64	12-28	13-88	15-46
Sedan	2-79	12-35	11-05	12-27
Swan Reach	1-81	10-18	9-62	11-06
Blanchetown	1-03	7-00	8-71	10-09
Eudunda	2-06	13-76	15-49	17-51
Sutherlands	1-50	8-86	9-84	11-20
Morgan	1-91	8-65	7-85	9-30
Waikerie	2-58	9-98	8-55	9-87
Overland Corner ..	1-06	6-65	9-31	11-03
Loxton	2-84	10-80	10-84	12-50
Renmark	1-06	7-89	9-43	11-06

WEST OF SPENCER'S GULF.

Eucla.....	0-55	6-32	8-76	10-01
White Well.....	0-53	5-85	7-78	9-20
Fowler's Bay	0-80	7-27	11-25	12-14
Penong	1-99	11-95	11-55	12-53
Ceduna	1-29	8-14	8-15	10-25
Smoky Bay	1-42	8-59	11-15	10-98
Petina	3-42	11-87	11-82	12-95
Streaky Bay	3-08	12-31	13-62	15-11
Talis	3-21	13-23	13-97	15-32
Port Elliston	3-21	14-61	15-36	16-56
Cummins	4-15	14-03	18-58	18-56
Port Lincoln	2-62	13-75	17-04	19-69

WEST OF SPENCER'S GULF—continued.

Tumby	4-70	12-97	12-96	14-56
Carrow	3-77	10-44	12-67	14-42
Arno Bay	3-15	10-48	11-72	13-06
Cowell	3-25	8-66	10-40	11-63
Minnipa	2-82	11-33	14-02	15-61
Ungarra	4-39	14-82	—	—
Darke's Peak	3-09	13-11	—	—
Kimba	2-51	12-10	—	—

YORKE PENINSULA.

Walleroo	1-49	13-24	12-91	14-15
Kadina	1-73	14-45	14-70	16-02
Moonta	1-37	14-29	14-01	15-35
Green's Plains	1-32	13-58	14-62	15-86
Maitland	1-28	19-29	19-53	20-17
Ardrossan	1-99	12-19	12-94	14-18
Port Victoria	1-31	15-10	14-20	15-56
Curramulka	2-55	15-43	16-81	18-20
Minlaton	3-02	17-31	16-53	17-90
Brentwood	3-45	16-11	14-47	15-83
Stansbury	2-43	16-60	15-72	17-01
Warooka	2-10	14-84	16-62	17-80
Yorketown	2-12	14-17	15-92	17-24
Edithburgh	1-90	13-41	16-28	16-58

SOUTH AND SOUTH-EAST.

Cape Borda	2-38	20-67	23-45	25-08
Kingscote	2-26	15-12	17-48	19-04
Penneshaw	1-70	15-10	17-36	19-47
Victor Harbor	1-92	16-79	19-56	21-49
Port Elliot	2-16	17-26	18-24	20-12
Goolwa	1-97	15-01	16-07	17-89
Mindarie	1-22	12-18	—	—
Alawoona	1-57	10-61	—	—
Karoonda	2-44	14-72	—	—
Sandalwood	1-46	12-50	—	—
Meribah	1-69	10-99	—	—
Pinnaroo	2-18	14-10	14-73	15-50
Parilla	1-43	13-18	12-97	14-51
Lameroo	1-50	18-36	14-49	16-32
Parrakie	1-82	13-71	13-03	14-58
Geranium	2-45	16-33	14-85	16-62
Peake	2-32	17-93	14-98	16-73
Cooke's Plains	2-46	18-26	13-64	15-14
Coomandook	3-12	19-77	15-68	17-49
Coonalpyn	2-95	20-55	15-57	17-40
Tintinara	2-48	17-71	16-66	18-70
Keith	1-26	15-91	16-18	18-22
Bordertown	1-70	16-84	17-15	19-39
Wolsley	2-11	17-64	16-28	18-12
Frances	3-42	20-67	17-56	19-73
Naracoorte	2-40	20-73	20-15	22-25
Penola	2-07	20-80	23-47	26-26
Lucindale	1-99	22-11	21-79	23-00
Kingston	2-57	23-20	22-17	24-51
Robe	1-61	19-41	22-64	24-69
Beachport	1-36	19-54	24-88	27-20
Millicent	1-50	26-94	26-88	29-39
Kalangadoo	2-08	27-55	29-81	32-47
Mount Gambier ..	1-62	22-22	27-70	31-20

AGRICULTURAL BUREAU REPORTS.

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		Nov.	Dec.			Nov.	Dec.
Alawoona	*	—	—	Geranium	*	29	—
Aldinga	*	12	10	Gladstone	376	7	6
Allandale East	396	14	12	Glencoe	*	13	11
Amyton	370	10	8	Glossop	†	5	10
Angaston	*	—	—	Goode	*	12	10
Appila-Yarrowie	*	—	—	Green Patch	†	10	8
Arthurlton	†	—	—	Guinare	†	5	—
Ashbourne	*	—	—	Gumeracha	†	10	8
Balaklava	*	8	13	Halidon	*	8	12
Bahannah	369	—	—	Hartley	*	—	—
Barmera	390	10	8	Hawker	*	11	9
Beetaloo Valley	*	—	—	Hilltown	*	—	—
Belalie North	*	8	6	Hookina	†	6	11
Berri	†	12	10	Inman Valley	*	—	—
Bethel	381	—	—	Ironbank	†	7	6
Big Swamp	*	—	—	Kadina	†	—	—
Blackheath	*	7	5	Kalangadoo (Women's)	†	8	13
Black Springs	†	11	9	Kalangadoo	395	8	13
Blackwood	*	17	15	Kangarilla	391, 395	7	12
Blook E.	*	—	—	Kanmantoo	*	8	6
Blyth	376	1	6	Karoonda	390	12	10
Booleroo Centre	376	7	5	Keith	*	—	—
Borrika	*	—	—	Ki Ki	*	—	—
Brentwood	382	6	11	Kilkerran	382	6	11
Brinkley	384	8	6	Kimba	*	—	—
Brinkworth	376	10	8	Kingston-on-Murray	*	—	—
Bundaleer Springs	*	—	—	Kongorong	†	17	16
Bute	*	6	8	Koonibba	*	6	11
Butler	*	—	—	Koppio	*	10	8
Calca	*	—	—	Kringin	386	8	6
Cadell	*	—	—	Kybybolite	*	11	11
Canowie Belt	*	—	—	Lake Wangary	*	8	6
Carrow	*	6	10	Lameroo	†	18	8
Charra	*	5	10	Laura	371	8	13
Cherry Gardens	390	11	9	Lenswood and Forest Range	*	—	—
Clanfield	*	—	—	Light's Pass	381	13	11
Clare	†	7	5	Lipson	†	8	6
Clarendon	*	—	—	Lone Gum and Monash	†	5	10
Claypan Bore	390	10	8	Lone Pine	*	—	—
Cleve	*	5	10	Longwood	395	8	6
Collie	†	—	—	Loxton	†	—	—
Colton	†	1	6	Lucindale	†	—	—
Coomandook	*	5	10	Lyndoch	381	6	11
Coomalpyne	*	14	12	McLachlan	†	—	—
Craddock	*	—	—	McLaren Flat	†	13	11
Crystal Brook	*	8	6	MacGillivray	†	11	9
Cungena	*	—	—	Maitland	*	6	—
Currency Creek	†	14	12	Mallala	*	17	15
Cygnet River	391	6	11	Maltee	*	7	5
Darke's Peak	*	12	—	Mangalo	*	—	—
Denial Bay	*	—	—	Mannanarie	373	6	8
Edillilie	384	—	6	Marana	*	—	—
Elbow Hill	*	11	16	Meadows	*	12	10
Eurelia	370	5	3	Milang	*	8	13
Farrell's Flat	370	7	5	Millicent	*	7	6
Frances	†	29	—	Miltalie	384	8	6
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Georgetown	*	8	6				

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Minnipa	•	5	—	Rosedale	†	—	—
Monarto South.....	390	8	6	Rosy Pine.....	•	—	—
Moonta	•	7	5	Rudall	383	6	R
Moorak	•	6	—	Saddleworth	•	7	—
Moorook	386	7	12	Saddleworth	†	14	12
Morohard	370	8	R	(Women's)			
Morphett Vale	•	6	11	Salisbury	381	4	2
Mount Barker	•	5	10	Salt Creek	•	—	—
Mount Bryan	376	—	—	Sandalwood	•	6	11
Mount Bryan East ..	•	—	—	Shoal Bay.....	†	5	10
Mount Compass	•	—	—	Smoky Bay	•	8	—
Mount Gambier	•	8	13	Spalding	†	21	19
Mount Hope	384	8	6	Stirling	†	22	6
Mount Pleasant	395	14	—	Stockport	381	14	—
Mount Remarkable ..	•	—	—	Streaky Bay	†	8	13
Mount Schank	•	11	9	Strathalbyn	395	11	9
Mundalla	•	6	10	Talia	•	8	13
Murray Bridge.....	390	18	—	Tantanoola	396	1	6
Myppolonga	†	10	8	Taplan	•	11	8
Myrta	†	8	6	Tarcowie	•	11	R
Nantawarra	381	6	11	Tarlee	381	11	—
Naracoorte	396	8	13	Tatiara	396	—	—
Narridy	•	8	13	Tweedvale	395	13	11
Narrung	•	8	13	Two Wells	381	—	—
Neeta	•	—	—	Uraidla & Summertown	394	3	1
Nelshaby	373	8	6	Veitch	•	—	—
Netherton	387	5	10	Virginia.....	376	R	R
New Residence	•	6	10	Waikerie	390	8	13
North Booborowie ..	373, 376	R	R	Wall	•	—	—
North Bundaleer	•	—	—	Wanbi	•	—	—
Northfield	•	—	—	Warcovie.....	†	5	9
Nunkeri and Yurgo..	•	5	10	Watervale.....	•	—	—
O'Loughlin	•	5	10	Weavers	†	10	8
Orroroo	•	—	—	Wepowie	370	11	9
Owen	381	7	5	Whyte-Yarcowie....	•	10	8
Parilla	†	7	R	Williamstown	381	12	3
Parilla Well	•	10	8	(Women's)			
Paruna	390	—	—	Williamstown	381	7	12
Paskeville	382	7	5	Willowie	370	5	10
Pata	•	—	—	Wilmington	•	6	10
Penola	†	1	6	Windsor	377	R	R
Petina	†	22	—	Winkie	•	—	—
Pinnaroo	389	14	12	Wirrabara	†	—	—
Pinnaroo (Women's) ..	388	7	5	Wirrega	•	—	—
Pompoota	•	12	10	Wirrilla	•	8	—
Poochera	•	1	6	Wirrulla	883	15	—
Port Broughton	•	7	—	Wolowa	•	—	—
Port Elliot	395	15	20	Wookata	•	—	—
Port Germsein	•	15	—	Wudinna	•	—	—
Pygery	•	8	6	Wynarka	390	—	—
Ramoo	•	10	8	Yacka	•	11	9
Rapid Bay	392, 394	1	6	Yadnarie	•	11	9
Redhill	374	—	—	Yallunda Flat	•	14	—
Rendelsham	•	5	10	Yaninee	•	—	—
Renmark	•	6	11	Yeelanna	†	8	6
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* No report received during the month of September.
A.M. Annual Meeting.

† Formal.
R. In recess.

‡ Held over until next month.

REPORTS OF BUREAU MEETINGS.**UPPER-NORTH DISTRICT.****(PETERBOROUGH AND NORTHWARD.)****WEPOWIE (Average annual rainfall, 13in. to 14in.).****September 8th.—Present: nine members.**

THE FARM SHEARING SHED.—In the course of a paper dealing with this subject, Mr. W. G. Gregurke said on a fairly large farm a shearing shed 42ft. x 30ft. should be erected, because a shed of that size would be useful in which to store grain and super when shearing was finished. The shed should provide for four shearers; a shearing board 7ft. x 24ft., with a board floor; two sweating pens, each 10ft. x 12ft., with battens; one waiting pen 13ft. x 24ft., with battens; leaving a wool space of 18ft. x 30ft., with concrete floor, which could accommodate a wool table 9ft. x 5ft., made of 3in. x 2in. rails fitted with rollers sufficiently spaced to allow second cuts to pass through.—The table should have folding legs with 3in. x 1in. blocks to prevent legs folding back. There should also be a sorting table 9ft. x 3ft. made on the same design, and four box presses, leaving a space 13ft. x 18ft. for sewing bales, &c. He recommended the erection of a hip roof over the shearing shed to prevent the wool becoming damp. The shorn sheep pens should be 6ft. x 12ft., with an outlet into an angle yard, running from 12ft. to 6ft. with a gate to form a crush pen to the branding race, which should be wide enough to hold three sheep abreast. A gate should be placed at the end of the race to allow the branded sheep to go into the large receiving yard. Mr. Gregurke also exhibited plans of the sheds and yards.

AMYTON, August 18th.—The meeting discussed the subject "Wheat Growing Competitions for the Upper Northern Districts. The annual report was read and officers were elected for the ensuing year.

EURELIA, September 3rd.—Mr. S. Manning read a short paper, in which he expressed the opinion that power farming in districts outside Goyder's line of rainfall would not be profitable, because the land was more suitable for grazing.

MORCHARD, September 13th.—Eleven members attended the meeting. A paper, "Poultry on the Farm," was read by Mr. F. Scriven, and a good discussion followed.

WILLOWIE, September 11th.—Mr. A. P. McCallum delivered an address, "Poultry on the Farm," and a keen discussion followed.

MIDDLE-NORTH DISTRICT.**(PETERBOROUGH TO FARRELL'S FLAT.)****FARRELL'S FLAT.****September 12th.—Present: seven members.**

CLOVERS.—Mr. G. S. Ashby contributed the following paper:—There are a number of clovers that are well established in this district, such as Woolly Clover, Burr Clover, and Cluster Clover. These are all excellent fodder plants, and are responsible in no small way for the large carrying capacity of some of the farms in the district. I have nearly 30 acres of subterranean clover, well established. It is an annual, and on account of its peculiar habit of re-seeding itself, is quite permanent. In the autumn of 1923 I sowed 4lbs. of seed and 1cwt. of super per acre of clover on stubble land. The following spring there was a wonderful growth, some of the runners being quite 2ft. long, and the ground in places was covered with a dense growth of excellent fodder, which all stock eat readily. In September, 1924, this clover is again making great headway, and appears to be quite permanent when once established. This district, with proper care and management in laying down clovers and grasses, could be

made to carry double the sheep now carried. If this is done, it will not only help the district generally, but help to prove that Australia's greatest asset is pasture lands, and with wool and mutton at such wonderful prices farmers will be greatly rewarded if they grow fodder crops."

LAURA.

August 16th.—Present: nine members and two visitors.

HORSES *versus* TRACTOR.—The meeting took the form of a debate on the relative merits of horse and motor traction on the farm. Mr. F. T. Hughes said one of the many advantages which horses had over tractors was that they could assist one another when in a tight place. Then, if a horse died the remainder of the team could, for a time at least, carry on the work; but if a spring or a cotter pin of a tractor broke, the tractor had to stop until the breakage was replaced. A statement was recently published to the effect that in the port of New York 72 per cent. of the vehicles used there for freight purposes were horse drawn; also, that the Canadian Trunk Railway after an experience with motor-drawn vehicles, were replacing these with those drawn by horses. If that were the case in America; claimed to be the home of tractors and cheap kerosine; how could we hope to use tractors successfully in Australia, where tractors and fuel are about double the cost. One special advantage of horse power was that horses could on a pinch exert about 10 times the strength that they were capable of maintaining for a four-hour shift. The tractor, on the other hand, had very little and frequently no reserve power. Some tests recently carried out revealed that a pair of draught horses developed over 27 technical horse-power. On that basis a tractor to equal an average 10-horse team would have to be well over 100 horse power. Mr. H. R. Lines said that a great majority of people had some knowledge of mechanical appliances used on the farm. Motor power had been in use quite as long as horse power in some shape or form. Labor-saving machi-

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very had been introduced into every branch of agriculture until Australia stood in the front in that respect. If continued progress was to be made, attention would have to be devoted to labor-saving methods, because altered conditions demanded it. He was of the opinion that the tractor, in conjunction with the horse, would assist in speeding up production. Granted that the tractor was a necessary adjunct for farming operations, the type and size to be used depended on the class of country worked, and the size of the farm. He favored the caterpillar tread type for level and sticky soil. Tractors would work where horses could, and comparisons made indicated that they would do the work as cheaply and with less drudgery than horses. He would far sooner drive a tractor than horses. On 12 months' work he was convinced that there would be a saving in using a tractor compared with horses. The only tests he had made so far with a tractor revealed that fallowing could be done with a tractor (allowing for reasonable wear and tear) at a cost of 3s. per acre. With careful handling and experience tractors would last a good deal longer than some critics alleged. Tractor power on farms had made rapid progress all over the world in recent years and had become an established method of farming. It would reduce work on the farm, station, and orchard in Australia as it had done in other parts of the world. It put more speed into farming operations, enabling agriculturists to do the right kind of work at the right time, and as it should be done. Mr. J. Kanauerhause, in placing before them an estimate of the cost of farming with horses, based his calculations on a 10-horse team. A team of that size should include a spare horse, and as breeding was a factor to be considered, he would include a two-year-old, fit to break in, also a yearling, making 12 in all. Averaging the team at £30 a head, including harness, a fair average team could be purchased for £360. If the team included four mares which could be used for breeding, two foals should be reared every year. When they were fit to break in, one could be used to replace an old horse in the team, thus doing away with depreciation, and one sold for, say, £25. Of that amount £10 could be credited for service of stallion, and £15 for repairs to harness, shoeing, wear and tear. A stable-fed horse required about 7 tons of hay a year. As farm horses were not stable-fed all the year round, and were turned out during certain periods of the year, the feeding could be cut down to five tons a year per head, making a total of 60 tons a year, which as hay at £3 a ton, and adding interest on money devoted to purchase of team, worked out at over £200 a year. With a 10-horse team 300 acres could be ploughed and worked up every year, ploughing 40 acres a week, taking about eight weeks. Feeding $1\frac{1}{2}$ tons of hay a week (£4 10s.), ploughing would cost £36; two harrowings, £10; two cultivatings, £36; seeding with a 17-hoe combine, about 100 acres a week, and a week's harrowing, £18; harvesting, six or seven weeks, £30; making a total of £130 for feed, while working, and costing £50 for feed while not working. According to those figures, the cost of ploughing would work out at about 2s. 4d. per acre; cultivating, 1s. 2d.; harrowing, 4d.; seeding, 1s. 2d.; harvesting, 2s.; making a total of 7s. per acre for farm work while the team was working. Mr. Victor Walter said that, after having owned and worked a tractor for 12 months, and used it in place of horses for all field work for that period, he claimed to be able to speak with some experience. His criticism of horse power was also backed with experience. Horse power advocates who had had no personal experience of tractors were at a disadvantage in criticising tractors. A strong point in favor of tractors for farm work was their compactness when compared with horses. A tractor could pass through narrow gateways and down narrow lanes without having to disconnect any part, and there was nothing more unwieldy or awkward than a large team of horses with many swingle-trees attached, or otherwise, to negotiate those places. In housing the tractor one had only to provide the same amount of room as would be taken up to stable one horse. Fuel and the handling of same for a tractor involved considerably less labor than feed for horses. Even at present prices of kerosine and lubricants, tractor feed was cheap compared with horse feed, with hay at the low price of £3 per ton. The total cost for kerosine, lubricating oil and grease for a period of 12 months, only amounted to £87. His experience with horses, for an 8-horse team for the same amount of work for a 12-months period, would not allow him to place the cost at lower than £150. To be on the safe side, he would put it down at £200 to keep the team fit and well. In addition to that, there was the uncertainty of a supply of

feed in a drought period. In his estimate of horse feed he had only based it on hay alone, allowing for several weeks when horses were idle and turned out. When turned out, however, they would be eating feed which might fatten a good number of sheep or cattle for the market. Experience had convinced him that the odds were overwhelmingly against horses in regard to cost of feed. Some had questioned the adaptability of tractors for all classes of farm work, and had claimed that to farm successfully with a tractor a team of horses must also be kept. His experience, however, was such that he was convinced that all field work, as well as stationary work, such as cutting chaff and sawing wood, could be done better with a tractor than with horses. He had done all his ploughing, cultivating harrowing, hay cutting, reaping, and sowing, in his first year's experience with a tractor, and could not have hoped to have done it better with horses. The only job he did not do with the tractor was carting, and that was due to the fact that he did not wish to go to the expense of purchasing a larger trolley. He did his carting with two horses kept for knock-about work. The more jobs given to the tractor the more one would want to do. Economical and efficient handling of farm operations could be done with a tractor. Depreciation was a question on which many divergent views had been expressed. His experience covered a 12-month period only, which he admitted was rather limited. He was, however, convinced that his tractor after 12 months' work had not depreciated in value more than £15. They knew that horses depreciated considerably in value, especially on hard work. The best of them were not worth much after 15 years' work. Depreciation of harness had also to be taken into consideration. A fair amount to put down for depreciation on a team of eight horses and harness for 12 months was £30 for a 12 months' period. An interesting discussion followed, in which several members and visitors took part.

MANNANARIE.

September 11th.—Present: 15 members and three visitors.

QUESTION BOX.—The meeting took the form of a "Question Box," the first subject to be discussed being "Which is the better share to use, cast or steel?" After a lengthy discussion the subject closed in favor of cast shares. "When is the best time to roll wheat?" Members were of the opinion that the crop should be rolled when it had reached a height of more than 6in. "What is the cause of boils on horses' shoulders, and cure?" Members thought over-feeding with corn and the horses blood out of order would be the cause of boils. To cure the trouble, the corn should be stopped and the horses given a tonic. Mr. Crawford gave an address on "Power Farming," a number of questions were asked, to which Mr. Crawford replied.

NELSHABY.

August 15th.—Present: 18 members.

BEAUTIFYING THE FARM.—In the course of a short paper dealing with this subject Mr. T. Haines said all fences should be kept in good order, and all bushes and rubbish taken away from the fences. Scrap iron should be stored in one place and not allowed to litter the homestead, and be left hanging on fences. In order to improve the appearance of the farm, he suggested planting trees in corners of paddocks. Trees enhanced the value of the farm, and provided shelter for stock. The writer also suggested that a good fence should be erected around the homestead, and flowers, shrubs, and ornamental trees planted.

NORTH BOOBOROWIE (Average annual rainfall, 16.35in.).

September 5th.—Present: seven members.

The Hon. Secretary (Mr. H. B. Mudge) read a paper, "Farming Under Present Prices and Conditions." The speaker first drew attention to the high land values and rentals that obtained in that district, and enumerated various methods of crop rotation. He expressed the opinion that only by increasing production could the farmer hope to compete with present-day prices and conditions, and that could be done best by sub-dividing the farm into smaller paddocks, growing fodder crops, and grazing the land heavily with livestock. A lengthy discussion followed.

REDHILL (Average annual rainfall, 16.79in.).

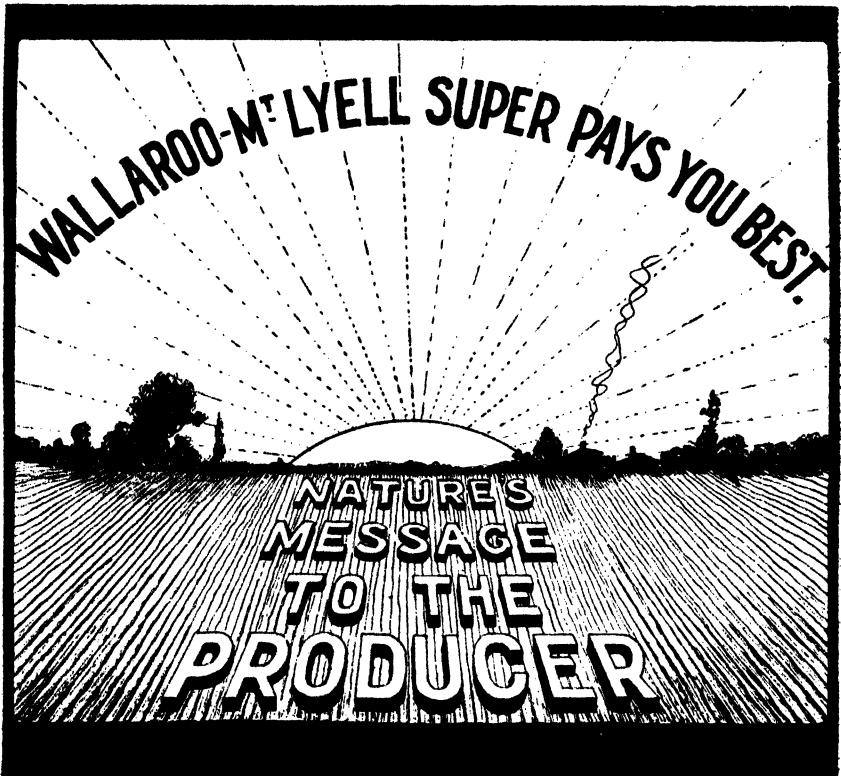
September 16th.—Present: 15 members and three visitors.

SHEARING PREPARATIONS AND HANDLING THE CLIP.—Mr. S. A. Bates read the following paper:—‘A month or so previous to shearing, the flock should be thoroughly inspected, and all sheep crutched as cleanly as possible. Ewes intended for breeding should be classed, each class being marked with a distinct number. It is a common practice for flockowners to buy good rams, and turn them in with the ewes without classing the sheep. This means indiscriminate mating. The better plan is to class the rams and ewes, and secure a good class of lamb. Wethers should be examined if the owner intends to sell a draft off shears or before shearing, and all the good-woolled sheep retained, whilst any carrying inferior fleeces should be numbered and sold in the wool or off shears. When crutching, all stained wool should be removed, because a daggy sheep coming on to the shearing board not only makes the board dirty, but no matter how careful the wool roller is, a small piece of stained wool is often rolled up in a fleece, and is very easily detected after being pressed and then opened up on the showroom floor. A good mixture for a disinfectant is Cooper's Milk Oil Fluid, mixed at the rate of 1 part of dip to 100 parts of water, which should be sprayed on the shed a few days before commencing to shear. Secure all shearing requisites, and have them in order before starting to shear, and see that the wool press, wool bins, and yards, are in good order. Before shearing is commenced, agreement forms for signing on the employees should be secured and filled in. Before placing the sheep in the shed, it is advisable to allow them to stand in the yard for an hour or so, because sheep off green pasture will dirty the pens, and the droppings will clog the gratings. Do not overcrowd the sweating pens, otherwise the sheep will be jammed in tightly, and there is a danger of their being smothered if they lie down; this applies especially to lambs. Do not fill the catching pens too full, because shearers like fresh sheep in the pen at least twice a run. Always make it a practice to count out and brand the shorn sheep after every run, because shearing is often done in cold weather, and a shorn sheep is always better out grazing than standing in the pen. Shearers should not be allowed to ‘leg’ sheep, but made to handle them as carefully as possible, and carry them from the catching pens to the board. Belly wool should be lightly skirted, and if from a wether or ram, the stained pieces should also be removed. Fine belly wool should be put in the bin and branded ‘A,’ strong wool should be branded ‘B.’ To skirt the fleece it is advisable to start behind the shoulder, and work towards the head and neck, taking off all seedy, stained, and sweaty locks, and also all matted wool around the head and neck. Then work back around the hind leg and around to the breech, taking off all seedy and stained pieces. Should the fleece be sandy in the back, that portion should also be taken out and placed in a separate bin. Carefully turn in the sides of the fleece and also turn back about 1ft. of the neck portion, and then start to roll from the breech, which will show the shoulder wool to the best advantage. A fine, bright wool with a fair length of staple and light in condition should be the top line, branded ‘AA’ ewes or wethers. A fine wool shorter in staple carrying more condition would be branded ‘A.’ A medium wool with a good staple and bright would be branded ‘BB.’ A strong coarse wool should be branded ‘B.’ Any dingy or cast fleece should be branded ‘C.’ Skirtings after being removed from the fleece should be transferred to the piece-picking table and carefully classed. Usually the pieces are only made into two classes—the clean, bright wool branded ‘AA,’ and the second line ‘A.’ Any small dingy pieces should go with the ‘floor locks.’ Floor locks are the trimmings from the legs and around the eyes, and any small, dingy pieces that may come from the piece table, and should be branded ‘floor locks.’ Table locks are the second cuts and all small pieces that may fall through the wool table, and these should be branded ‘table locks.’ All stained wool should be dried on a drying rack before being baled, and carefully examined and all hard dags removed and branded ‘stains.’ Never force the lines of wool by placing an inferior fleece in them, because one inferior fleece may spoil the sale of that line of wool. It is not advisable to put too much weight in the bales, 3cwts. is about the right weight for a bale to turn the scale. Be careful in sewing the bales, and have them nicely and neatly stitched, and all spare string removed. When branding the bags, always brand neatly on the top and side, and keep the

bales free from dust or dirt. In classing lambs' wool it is usual to make three classes. The top line should be of a long staple, light and bright, and branded 'AA.' The second line, a shorter staple carrying a little more condition, branded 'A.' The third line, short, heavy-conditioned wool, branded 'lambs.' After shearing is completed, the board and tables should be thoroughly washed, and any wool packs, &c., that are left over should be put aside for next year. Employees are bound under agreement to clean their sleeping apartment and leave everything in order, and also to return anything they have been using belonging to the employer in good order, with reasonable allowance for wear. At joining up season it is an easy matter to draft the ewes by the distinctive number, and join the rams that have been chosen for them. After the ewes have been with the rams for eight or ten weeks, the rams should be removed, and the ewes can be put together again for lambing season." A good discussion followed.

BLYTH, August 9th.—Mr. A. L. McEwin read a paper, "Impressions of Eyre Peninsula," in which he gave an interesting description of the country from Port Lincoln to Cape Thevenard.

BOOLEROO CENTRE, September 26th.—The Hon. Secretary (Mr. J. Michael) read a paper, "Power Farming," and an interesting discussion followed. The report of the delegates to the Annual Congress was received and discussed.



BRINKWORTH, September 1st.—The Wool Instructor of the School of Mines (Mr. A. H. Coddington) delivered an address, "The Wool Industry," to a gathering of 35 members and 13 visitors.

GLADSTONE, September 12th.—Mr. R. E. Lines tendered a report of a commission he was granted by the Government to inquire into agricultural methods in England.

MOUNT BRYAN, September 13th.—An address, "Classification of Farmers' Lots of Wool," was given by Mr. L. Fleming. This was followed by a lengthy discussion.

NORTH BOOBOROWIE, October 6th.—A paper entitled "Power Farming" was read by the Hon. Secretary. This was followed by a good discussion. The consensus of opinion amongst members was that the tractor had not yet been sufficiently tried to justify definite conclusions as to its place on the farm.

LOWER-NORTH DISTRICT.

ADELAIDE TO FARRELL'S FLAT.)

VIRGINIA.

August 13th.—Present: 11 members.

FALLOWING.—Mr. B. Stevens contributed the following paper:—"Fallowing is generally taken to mean the ploughing and working of land during the previous winter, spring, or summer, to which the land is sown with a crop. There is a very wide divergency of opinion amongst farmers as to the best methods to adopt for ploughing, cultivating, rolling, harvesting, &c., and it is quite safe to say that each farmer has to experiment himself on his particular class of land to ascertain the best methods and the best time to perform the various operations in connection with fallowing. Certain general rules can be observed, but by no means can they be said to be infallible. The advantages derived from fallowed ground over unfallowled ground are so manifest that it seems hardly necessary to debate the necessity for fallowing. The following are a few of the advantages of fallowing:—(1) The work on the farm is more evenly distributed throughout the year. (2) Moisture is stored in the soil against a possible dry season. (3) A firm seed bed is established, which is absolutely essential if a crop has to withstand a long dry spell. (4) Plant foods are stored in the soil in the process of fallowing, because of capillary action of the soil is stimulated. (5) The process of nitrification is greatly stimulated, and nitrogen is restored to the soil. Moisture is absolutely essential for the active working of soil organisms in manufacturing nitrogenous organic matter in the soil. By fallowing, the necessary moisture is stored for this purpose. Each time the soil is loosened and moved there is a new distribution of the nitrifying organisms in the soil, and each time the soil is cultivated and worked the manufacturing plant food is stimulated. Some farmers contend that it is only necessary to cultivate the land and not to plough it. In districts where experience proves cultivating preferable to ploughing, it would be foolish to say that the land should be ploughed. In this district it has been established beyond doubt that it is best to plough the land. The depth to which the ground should be ploughed is always a controversial point amongst farmers. Where clay is close to the surface the ground should not be ploughed too deeply. In fact, there is a large majority of farmers who contend that land should never be ploughed more than 3in. to 4in. deep. If ground is ploughed deeply, say, 6in. to 7in., it is necessary to also cultivate deeply, and the seed bed thus becomes lower, which means that the seed has to be sown more deeply. The grain should be sown on a firm seed bed. In order to divide the work on the farm evenly, start fallowing as soon as possible after seeding operations are over, even though the early fallow will require more working later on to keep it free from weeds. There are two things which a farmer should keep in mind in the procedure of fallowing. First, he should keep the fallow as free from weeds as possible, and, secondly, he should endeavor to maintain a nice tilth and secure a firm seed bed for the coming crop. A firm seed bed means that the top 2in. of soil should be loose, and

underneath that the soil should be firm, so that the roots of the young plant will have a moist, firm bed, with a sufficient available supply of plant food close at hand without having to fight for it. On sandy soils it is not necessary to harrow the ground, because it tends to make it drift, but in heavier soils it will be found necessary to harrow in order to break up big lumps, particularly in a season like the present, when it has been difficult to plough the land. It is always advisable to cultivate after rains, if possible, although this cannot be made a hard and fast rule, because when land is dirty with weeds it is necessary to cultivate it to kill them. The number of times which land should be cultivated depends entirely on the season. In a wet season the land has to be worked more than in a dry one, although it is an excellent plan to run a few sheep over the fallow in preference to too much working. Three cultivations from the time land is ploughed until seed time should be ample, but no farmer can lay down a hard and fast rule even for himself; he has to be guided entirely by the season. If land has been kept clean and thoroughly tilled during the whole season, it is ready to sow when the first rains fall in the autumn. The more thorough the preparation of the fallow the more necessary is it to sow the land in early autumn, because in the event of heavy winter rains setting in early it becomes difficult to get on the ground to sow it, and the more so if it has been worked to a nice fine tilth."

WINDSOR.

July 29th.—Present: 12 members and three visitors.

TREE PLANTING.—In the course of a paper dealing with this subject, Mr. H. Clark said natural trees in that district did not provide much shelter for stock, because the tree tops were far too high from the ground to break the force of the wind. Judicial planting of trees in corners of paddocks and around the homestead increased the value of the land, and added to the appearance of the property. Old plantations that had come under his notice proved that it was no advantage to plant trees too thickly, because the trees grew very spindly. That was most noticeable with Sugar gums. In that district Sugar gums should be planted 10yds. apart and Aleppo pines 13yds. apart. Mr. Clark preferred pines to gums, because the foliage of the pines was nearer the ground, whilst they were equally as shady as gums. The loss of trees during the first summer was not great if they were watered occasionally. It was a mistake to plant more trees than could be attended to. Trees planted from pots made a better start than those pulled from a bed. Fruit trees were almost an essential to a homestead; they added to the appearance of the farm, were an interesting hobby, and provided fresh fruit. On account of bird pests, pears, apples, and citrus fruits were preferable to stone fruits, because the first-named fruits would ripen off the tree. When planting more than one tree of the same fruit, it was an advantage to have early, late, and mid-season varieties. As protection against birds, netting hung over the trees or vines was effective and inexpensive.

The Hon. Secretary (Mr. A. R. Williams) read the results of the experimental wheat plots conducted by Mr. S. D. White.

WINDSOR.

August 19th.—Present: nine members.

GARDENING.—Mr. M. Williams read the following paper:—"In front of the house a piece of land 30ft. from the verandah and the width of the house should be set aside for the garden. A plot of ground 12ft. square will be a convenient size for a lawn, which should be bordered. Four beds should also be made in front with bordered paths. Either a wire netting or galvanized-iron fence will protect the garden from stock and vermin. The lawn plot should be thoroughly dug and manured in August, and with regular digging to the end of October a fine bed for the lawn will be produced. Couch grass is a very hardy lawn grass. The seed can be mixed with sand and scattered over the plot. Constant watering is essential, and weeds should be kept out of the lawn during the early stages of growth. When established, a dressing of rich black soil should be put over the lawn. A garden of this size can be

planted with about 40 rose trees. Standard or bush roses, as the gardener desires, should be planted around the edges of the flower beds about 3ft. 6in. apart. A gate in front of the house, opening on the middle path between the flower beds, should be provided. Three climbing roses on either side of the path, in the two beds near the gate, should be planted, and a suitable arch erected so that the roses can be trained thereon. The preparation of a hole for each rose tree is essential. A hole 18in. square and 9in. deep should be dug and manured. When the tree is planted the roots should be laid out and around the hole. This applies to any rose tree, and is very essential in planting. A strip of land along the side or at the back of the house will make a suitable place for fruit trees. Too many trees of the same kind should not be planted. I suggest planting 10 trees. An early, medium, and late peach, a nectarine, two kinds of plums, a fig tree, orange, lemon, and a mulberry should be planted. The trees should be planted 10ft. apart in July. No garden is complete without some grape vines, and these should be planted about 8ft. apart. For a variety, the following will be useful:—Doradilla, Currant, Sultana, Sweetwater, White Crystal, Black Prince, and Black and White Muscatel. Eight vines 8ft. apart trained on to a trellis, four each side, make a nice trellis of grapes. During August the ground should be prepared for vegetables. The conversion of fresh manure into humus, in which all garden plants delight, does not take place in the absence of air. For this reason it is not advisable to dig too deeply in heavy soils and bury the manure at a depth of, say, 12in. Much better results will be obtained by confining cultivation to the surface and adding manure to it. The soil so treated is rendered more open, and manure is rapidly oxidised to form humus, from which supplies of plant food are liberated. In sandy soils the oxidation of organic matter takes place rapidly, and greater liberties may be taken with them, but it is advisable, when adding manure, to mix it thoroughly through the soil. Spreading manure over the surface and leaving for two or three weeks before digging is another good plan. Good results are obtained in light soils by allowing the manure to remain as a mulch from winter to autumn, and then dig in what is left. Mulching in sandy soils appears to be beneficial all the year round, preventing the soil from becoming over heated during the summer and protecting it from rapid cooling during the winter. One of the most important advantages of mulching is that it reduces the need for watering, and, consequently, the cost of labor in the garden. It also reduces the amount of surface cultivation, such as hoeing, hand weeding, stirring with cultivator, and raking, &c. Many advantages are obtained by mulching—firstly, the roots of the plant are kept cool; and secondly, it stimulates the growth of crops. When using a mulch, do not apply it to dry soil or the roots of the plants will be kept in a dry condition. Planting trees.—A hole about 3ft. in width and about 12in. around the outside of the hole should be dug, the earth being loosened at the bottom. When planting a fruit tree, cut off any broken portions of roots, place the tree in an upright position, and place the strongest roots to the side from which the prevailing winds blow. Separate the fine roots and distribute them in their natural positions. Place fine earth in the hole until it is two-thirds full. Firmly pack the soil about the roots. Fill in the hole and leave the surface soil loose. Tie the stem of the tree to a good stake. June is the best month, but planting may be done in any of the winter months. Bonedust placed in the hole before planting produces good results. Citrus trees are best planted in early spring, because the young and tender shoots will not be affected by frost. The pruning outfit should be of the best, though few tools are needed. Jagged and blunt tools inflict bruises and injure the trees and vines, the wounds will take a considerable time to heal and permit of the entrance of fungus pests. It is important before cutting off a branch of a tree or cane of a vine to make sure that the last bud left on the branch is a sound, plump one, and also that this bud is a leaf bud and not a fruit bud. Leaf buds differ from fruit buds in that they are more elongated, flattened, and more pointed in the same species of plant. They are either single and give rise to only one shoot, or they may be double or even triple, as in stone fruits, when they produce either leaves or shoots. Fruit buds are distinguished from leaf buds by their fuller and rounder appearance. The scales that cover them are broader

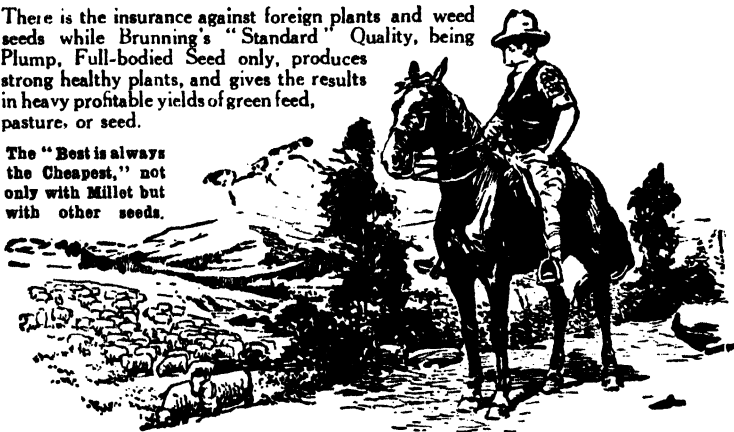
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and they begin to swell and burst early in the spring. Fruit buds may occur singly in case of apples, pears, or quinces, or may be single or double, or even triple, in the case of stone fruits, producing one flower as in the peach, nectarine, almond, and apricot, or two or more flowers in a cluster as in apples, pears, and cherries. Many trees develop buds towards the summit of the shoots. These should be cut off. When pruning and cutting to a bud, a slight slant is given to the cut, the cut being made about $\frac{1}{2}$ in. above the bud on the higher side of the cut and the lower side of the cut level with the bottom of the bud. Deciduous trees should be pruned during June, July, and August. Pruning may be commenced directly the wood is ripe. This is ascertained by the dropping of the leaves. Apricots are benefited by a preliminary pruning in late summer, being then less subject to gumming and dying back, whilst the leaf buds have thus more time to be transformed into fruit buds. Older trees, are, as a rule, ready to prune before young trees. For localities subject to frosts, or where cold air rests in hollows and gulleys, it is advisable to delay pruning of vines, peaches, and plants until later in the season. Summer pruning is done when the tree is in active growth. In pruning the vine, it must be borne in mind that excessive growth is detrimental to heavy fruit bearing, but on the other hand, heavy fruit bearing checks the growth of the plant. The art of pruning a vine is to so prune as to balance the bearing and the growth of the plant. Each shoot is capable of producing two bunches of grapes. An average vine is capable of supporting from a dozen to three dozen limbs. These should be uniformly distributed, according to the system of training adopted, stronger arms being permitted to carry more buds than the weaker ones. In pruning grape vines there are several facts which should be borne in mind. The vine bears its fruit on wood of the present season's growth, which issues from a bud on wood produced the preceding year. Leave matured, medium-sized, and short-jointed wood in preference to either excessively strong or spindly, stunted canes. In training a young vine on a trellis the first year's growth should be pruned so that two canes are left from 14 in. to 16 in. long. Should suitable canes not be obtained, cut the young vine hard back to two buds, and tie to a stake the stronger of the two resulting shoots. These stakes should be placed at the side from which the prevailing wind blows. Vines are either pruned to spurs or spurs and rods in combination. A spur consists of the basal portions of a cane and is made up of two full internodes or joints. This leaves two buds as well as the basal bud. A thin and weak cane should be put back to one bud. A strong cane can be left with three buds in addition to the base bud. There are three methods of pruning—short, long, and mixed. Short or spur pruning consists of leaving short spurs of one to three buds. This applies to vines of moderate growth, which bear fruit from every joint of the fruiting wood. Crops are thereby reduced, but they are consequently of a finer quality. Rod or long pruning consists in making one or more long fruiting canes of the previous season's fruiting canes, six to 10 buds being left. This is applicable to those varieties which only bear fruit on shoots arising from buds situated further away from the base of the shoot, the buds near the base being, as a rule, infertile. If these were short pruned most of the fruit buds would be removed, and the result would be luxuriant growth of wood and leaf, and a very small crop. Mixed pruning is an intermediate system. It is useful in the case of vines which, though usually rod pruned, fail through exhaustion and lack of vitality to carry a full crop of well developed fruit. In most gardens vines are trained on to a trellis and are pruned with short spurs along permanent arms or with long fruiting buds. The main principle in pruning the vine is to cut out all dead wood, remove branches or canes which cross or rub each other, and suppress water shoots and suckers. It is advisable when pruning fruit trees, to keep the centre free from all branches and not allow the branches to grow too high. This is known as the low standard or vase system, it forms a stocky tree, well balanced within easy reach of pruning, spraying, and picking, it shelters the stem from sun scald, resists heavy winds, and does not require very much space in which to be cultivated. A good method of checking codlin moth is to tack an old piece of bag around A good method of checking codlin moth is to tack an old piece of bag around the butt of the tree and the moths will collect under it, when they can be

easily destroyed. The pieces of bag should be attended to once a fortnight. The fig tree readily lends itself to renovation. It may be shortened back to the main arms or cut to a stump in winter. Young shoots arising from the stumps are, however, so numerous that they must be judiciously thinned out when growth is in progress. Rose pruning is followed very much on the same lines as vine and fruit tree pruning. It is necessary to see that two stems do not cross or rub each other, and to keep the centres open. All roses near a path should be pruned in such a manner that the stems will not grow out and over the path. Cut back standard roses to two or three buds, but never prune off new wood if it can be avoided. In pruning a climbing rose to a pedestal, watch for new wood which should be trained around the pedestal or arch. If one wishes to obtain good roses, the following method should be adopted. Take as an example a rose stem with three or four buds on it, select the best formed bud and one which is on the main stem and snip off the remainder. It will be obvious that there is only the one bud to nourish, and consequently a much better rose will be produced. The planting of shrubs in the garden is a good plan for the man who is not keen on flower gardening. When planting vegetables, press the earth firmly around the roots, and leave the surface of the soil in a loose condition. It is not the size of the garden that attracts attention, but how the garden is cared for." An interesting discussion followed.

BETHEL, September 23rd.—Mr. A. M. Fuller (Tarlee), General Secretary of the Midlands District Wheat Crop Competitions, addressed the meeting on the subject, "Rotation Cropping and the Advantages of Crop Competitions."

LIGHT'S PASS, August 14th.—Mr. J. B. Harris (District Orchard Instructor and Inspector) delivered an address, "Fungoid Diseases of Fruit Trees and Vines," to a gathering of 23 members and six visitors.

LYNDOCH, September 17th.—A letter from Mr. J. Hammatt (Hon. Secretary), who was making a trip through New South Wales, was read and discussed. The letter contained interesting information relating to the condition of pastures and stock in New South Wales. Mr. A. Springbett read an article "Divining for Water."

NANTAWARRA, September 4th.—Ten members attended the meeting when a paper, "Some Aspects of Power Farming," was read.

NANTAWARRA, October 2nd.—The report of delegates who attended the annual Congress was received and discussed. A paper, "Method of Colt Breaking Single Handed," was read by Mr. A. Greenshields, and a good discussion followed.

OWEN, September 16th.—Mr. A. W. Freebairn gave an interesting report of the various lectures given during the 1924 Winter School for Farmers at Roseworthy Agricultural College.

SALISBURY, September 2nd.—A paper, "Orange Growing," was read by Mr. E. V. Harvey, and an instructive discussion followed. Eighteen members attended the meeting.

STOCKPORT, September 18th.—Mr. R. Gillespie (Dairy Assistant) gave a practical demonstration of milk and cream testing to a gathering of 15 members and 13 visitors.

TARLEE, September 15th.—The Hon. Secretary (Mr. A. M. Fuller) read a paper, "Outstanding Impressions Gained as a Result of the 1924 Winter School for Farmers at the Roseworthy Agricultural College." Mr. A. Molineaux gave a full report of the 1924 Annual Congress.

TWO WELLS, September 22nd.—A paper, "Power Farming," was read by the Hon. Secretary (Mr. H. Kenner), and an interesting discussion followed.

WILLIAMSTOWN (WOMEN'S), August 6th.—The subject "Laundry Work on the Farm Household" was brought forward, and an instructive discussion ensued.

WILLIAMSTOWN, September 5th.—The meeting took the form of a Question Box, when several questions of local interest were brought forward and discussed.

YORKE PENINSULA DISTRICT.

(TO BUTE.)

BRENTWOOD.

September 11th.—Present: 13 members and two visitors.

BREAKING HORSES.—Mr. C. A. Watson read a paper dealing with this subject, and in the discussion that followed Mr. F. J. Nation recommended the plan of placing the colt between two quiet staunch horses, putting a breeching on the youngster and attaching the animal to the hames of the other horses, when there would be little risk of the colt jibbing, such as might happen when harnessed to a log. He preferred breaking in colts which had not been previously handled, because they were less cunning than colts that had been handled when foals. Mr. A. E. Twartz was of the opinion that working the colt with an open bridle was the best plan, but winkers could be used for putting the colt in the team. Mr. R. G. Anderson concurred with previous speakers in handling young horses with other quiet ones, but his experience had been that head-stalls often caused a young animal to rear, and he advocated the use of winkers from the beginning.

KILKERRAN.

September 2nd.—Present: 11 members.

FARM BLACKSMITHING.—Mr. F. H. Koch, in the course of a paper dealing with this subject, outlined the necessary equipment for a blacksmith shop on an average sized farm. The details were well discussed and supported, it being suggested that in cases of well-established farmers, it was very handy to have a small engine to drive the drilling machine, grindstone, &c. Mr. P. Clasohm expressed the opinion that much loss of time and money could be saved by having a blacksmith shop, rather than take up the greater part of the day driving into the town to have a small job done. According to Mr. C. F. Heinrich, the use of a clean fire was half the work in blacksmithing. Other important additions to the blacksmith shop were tools for shoeing horses and a crush pen in which the most restless or young horses could be handled by one man. For the purpose of cutting horses' hoofs, Mr. Heinrich had found that the most successful method was the use of 1½ in. socket chisel with an old fork handle inserted to the length of about 3ft. With that and a 4lb. hammer it was a simple matter to cut the hoof of a horse that was inclined to kick. Mr. I. T. Keightly had found it difficult at first to do blacksmithing on the farm, but by persevering he was able to do many jobs at home, and was confident that he had saved a great amount of time by so doing.

PASKEVILLE, September 5th.—Members discussed the subject "Rabbit Destruction," and the report of the delegates who attended the meeting of the Northern Yorke's Peninsula Field Trial Society was received and discussed.

PASKEVILLE, October 7th.—A paper, entitled "Hints on Power Farming," was read by the Secretary, after which arrangements were made for the forthcoming field trial to be held in that district.

WESTERN DISTRICT.

ROBERTS AND VERRAN.

September 11th.—Present: eight members.

SHEARING AND WOOL CLASSING.—Mr. M. Masters read a paper dealing with this subject. In the discussion that followed Mr. A. T. Cowley did not think it advisable to make too many classes of the farmer's clip. Ewes, wethers, and hoggets could all be classed together, instead of separating the hoggets' wool from the others, because it all brought about the same price. Grating should be used in the catching pens to assist in keeping the sheep clean. Drafting yards should be erected some distance away from the sheds, and constructed with timber instead of wire. Mr. W. H. Whittaker said the shearing board should be on one side of the shed, and favored trapdoors for the shorn sheep to

pass through at the back of the shed. When classing wool all stained pieces should be removed, otherwise a good price would not be obtained. The wool table should be placed against the shearing board, and could be made of wire netting. Mr. C. Masters did not favor too many classes of wool in a small clip. The implement shed could be used for a small flock, but when a large number of sheep were to be shorn, a proper shearing shed should be used. Yards and shed should be large enough to hold sufficient sheep to keep the shearers going all day in the event of wet weather.

RUDALL.

August 14th.—Present: nine members.

FALLOWING.—Mr. E. Jones, who contributed a short paper dealing with this subject, said fallowing was the most important work on a farm, because it was the initial preparation for the next crop. Work should be commenced immediately after seeding, providing there had been sufficient rain to germinate weed seeds. On heavy soil on an average-sized farm a five or six-furrow heavy plough should be used. On light soil, a skim plough would do effective work. Two or three inches was quite deep enough to plough, provided the plough was cutting up all the ground. Directly after ploughing the harrows should be worked and all stumps and bushes removed, so that the land would be ready to work back with the next rain. The fallow could be worked with a cultivator, but if the land was clear of stumps, shoots, &c., a spring tyne cultivator was preferable, because it was wider and the draught was not so heavy. Mr. A. Jericho said he did not believe in sacrificing seeding time in order to obtain early fallow. Fallowing should be deep enough to turn weeds well under. Members agreed that a disc plough should only be used when an ordinary plough could not negotiate bushes.

RUDALL.

September 11th.—Present: 12 members and two visitors.

LAYING OUT A MALLEE FARM.—In the course of a short paper dealing with this subject, Mr. C. Smith said the site for the homestead should be high and well drained, so that no water would lodge around either the house or the stables and sheds. The homestead should be as near the centre of the farm as possible, in order to save time going to and coming from work. The first clearing of the block should be done as far to the back of the homestead as possible, so that permanent fences could be erected. Small feed paddocks should be made near the homestead, and a dam sunk near the homestead if possible, so that stock could be watered quickly. Great care should be exercised in making stables and cowyards, to see that they were provided with good drainage away from both the dam and house. The house should be a little to the north-east or south-west of the stable, to keep the house free from flies and dust. Mr. Crabb, in opening the discussion, said that the necessity for keeping stable drainage from the dam could not be too strongly emphasised. Mr. Wake said that farms should be subdivided into 100-acre paddocks. Mr. J. Crabb said that small feed paddocks suitable for planting green feed were very useful. Temporary fences were a waste of valuable time and ultimately a financial loss. Mr. Jericho said that for the proper laying out of a farm, labor and capital were necessary. The new settler was seldom well equipped with either, and that was the cause of so many temporary buildings. During the general business Mr. Smallacombe asked what variety of wheat was offering the best resistance to the dry weather. Members agreed that all late varieties were looking well. Mr. George Potter said that if late rains fell the late wheats would be up to the average. Mr. Jericho favored Gluyas.

WIERULLA.

August 20th.—Present: 12 members and five visitors.

RABBIT DESTRUCTION.—Mr. T. L. Lovegrove read the following paper:—"The destruction of rabbits should be looked upon as one of the most important jobs on the farm, and at the right time other work should be laid aside, and no effort spared to destroy the vermin. Many farmers make little attempt to clear

their properties of rabbits until after seeding. This is a great mistake. There is a difference of opinion as to the most opportune time of using the poison cart. Some farmers advocate waiting until after the first rain. This is a mistake, because very often the rain is too late, and does not give the farmer sufficient time to deal with the pest before the beginning of seeding. To obtain the best results from the poison cart, it should be used during March, and should the weather continue dry good results would be obtained in April. Six to eight days after the poison cart has been used the burrows should be filled in and destroyed. If this is repeated a second time the pest should then be under control. Should there be a few stray rabbits causing trouble, a spring trap or two should be used. All open places should be put under cultivation as soon as possible, because these provide breeding grounds for the rabbits. To make a rabbit-proof fence, the posts should not be more than 15ft. apart. A middle wire should be used to keep the netting upright. Netting used should not be under 3ft. 6in., and a 5in. trench should be deep enough."

EDILLILIE, October 4th.—The Hon. Secretary (Mr. J. F. Carter) gave a report of the proceedings of the Annual Congress and also read a paper, "Power Farming," which aroused a keen discussion.

MILTALIE, September 12th.—The monthly meeting of the Branch was held at Mr. J. P. Story's residence. A paper, "Power Farming," was read by the Hon. Secretary (Mr. W. G. Smith).

MOUNT HOPE, September 13th.—Several subjects of local and timely interest were brought before the meeting, and an instructive discussion ensued.

EASTERN DISTRICT.

BRINKLEY.

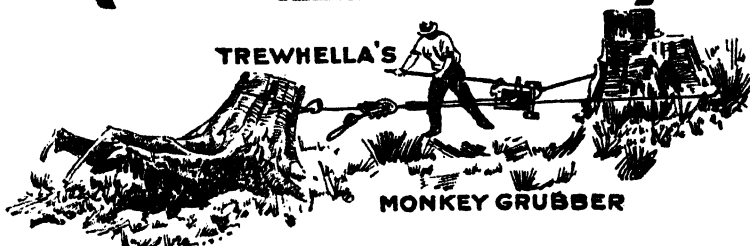
September 13th.

SIDE LINES.—Mr. A. W. Richards read the following paper:—"There are many side lines that can be undertaken successfully in conjunction with wheatgrowing; in fact, some are almost a necessity to obtain the best results from wheatgrowing. One side line is the growing of oats; they make an excellent rotation crop and open up the way for a side line in hay and chaff, for which there is always a good demand in this district. Sheep are another good side line, and wheat cannot be successful without them. They assist to keep the fallow clean by keeping down weeds; they also help to make a firm seed bed by packing the land down, and they supply the household with meat, which means a considerable saving. Most farms in this district could run at least 200 breeding ewes. A large framed Merino ewe is the most profitable type to keep; they are far less trouble with fences than crossbreds; they should cut at least 10lbs. of wool, worth at present up to 2s. 6d. per lb., and rear about 75 per cent. of lambs. Cows are another good side line if the farmer has a large family, but if he has to employ labor it would pay better to keep just enough for his own use and go in for more sheep. Pigs are a very payable side line at present, and will continue to be for some time. It would pay better to keep a few breeding sows and breed pigs, because it is very difficult to buy store pigs just when they are wanted. A Tamworth-Berkshire cross sow mated with a pure Berkshire boar will produce a very good bacon pig that will sell readily at a very satisfactory price; it also produces a larger litter than the pure-bred sow. Pigkeeping also opens up the way for another side line in barley growing, which can be grown successfully in this district, and by feeding it to pigs it will soon be turned into profit. Fowls are another line that are too often neglected on the farm. White Leghorns are the best egg producers, but the Black Orpingtons are good all-round fowls. They are good layers and are also splendid table birds; the cockerels should be penned up and fattened for market. The hens will lay much better if this is done; hens should not be kept after they are three years old. Every farmer should try to breed a foal or two every year to replace old horses in the team and so keep up the strength of it. There is another side line which would pay and also help to beautify the farm and also make shelter for stock, and that is to plant wattles on any patches of sand that are liable to drift badly."

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KRINGIN.

July 12th.—Present: 14 members.

MIXED FARMING AND ROTATION CROPPING.—In the course of a short paper dealing with this subject, Mr. H. Lukehurst took, as an illustration, 1,000 acres of cleared land divided as follows:—300 acres wheat, 300 acres fallow, 100 acres of oats, and a 200-acre feed paddock, half of which should be drilled with a mixture of oats and barley for feed, the other half being left with a view of securing self-sown feed. The remaining 100 acres should be left near the homestead, and subdivided into at least four paddocks to grow fodders. He suggested that one of the small paddocks should be sown the first year with 10lbs. of lucerne seed per acre and changed every four years, always sowing the second paddock one year before ploughing the first. The land should be fallowed after lucerne, and wheat sown on the fallow. In one of the small paddocks he recommended 10 acres of sorghum. A farm of that size, if properly worked, should carry 12 milking cows, 200 sheep, and four breeding sows. All manure from stables, cow sheds, and piggeries should be carted on to the land. In the discussion that followed, Mr. F. Morrow considered sandy land would be most suitable for growing lucerne. Mr. F. Tee thought that when farmers adopted mixed farming in that district Comeback sheep would prove most profitable, because they produced good lambs and the wool often realised as much as Merino. Messrs. Menz and Connell favored the Merino, because they were quiet, easily kept, and good all round sheep. Mr. Palmer asked the writer the best breed of pig, and the best utility cow for the farm. Mr. Lukehurst favored the Berkshire-Tamworth cross for pigs, and the milking Shorthorn cow.

MOOROOK.

September 12th.—Present: 10 members.

IRRIGATION.—Mr. W. E. Muspratt (Irrigation Instructor and Inspector) read the following paper:—"Water makes up a large part by weight of all living and growing parts of plant life, and is the medium in which the transformation of crude materials into assimilable food products takes place, and by means of which these products are transported to various points of growth. It is only when the important role played by water in crop production is realised that we are in a position to see how necessary to maximum yields is the correct amount of water at the right time, and to insure the crops sufficient irrigation and an adequate drainage. It is not alone for the crop that is being grown that water is needed in the soil. If the water content of any soil be reduced below a certain amount bacteria are unable to do good work. Again, if the soil be water-logged, there can be little soil ventilation, and bacteria are forced into a thin zone close to the surface of the ground, but if the surface is allowed to become dry then the process will cease, and the crop above ground will be checked. Flooding, except on very sandy soil, or where deep drainage has been provided, and it is desired to drive the salt down into the drains, is not justifiable. It causes land to dry out sooner than that irrigated by furrows, because the water seals the ground and destroys the bacteria and other life in the soil, and so prevents Nature's system of plant-food building. In water-logged soils, plants are forced to occupy the surface soil, because the roots cannot live in the water-logged region. Then a dry period comes with all the life processes going on in the soil confined to surface, the demand for water from the roots caused them soon to dry out the portion they occupy, and so a violent check is brought both upon the plant itself and upon all food-forming processes in the soil, because under these conditions capillarity cannot keep pace with the loss of water from above. Other plant foods which contain phosphoric acid, potash, lime, magnesia, iron, and sulphur, must be converted from the inert solid form in the soil into solution in water, before they can be of any service to plant growth. On sandy loams from 4in. to 4½in. of water for irrigation is about an average to aim at, and in order to distribute this evenly, it is necessary to have water in the entire length of furrow as nearly as possible the same length of time. To do this one must not have too long a run for the water—five chains is approximately right—or the channel headland end will receive too much before the bottom end receives any water. This is one of the main causes of seepage troubles, because the water percolates to the impervious strata, and shows out at a point where the

soil texture changes. At this point the soil is of a stiffer nature, and does not allow water to continue draining along the impervious strata. It gradually fills up the strata immediately above the impervious one, and so forms a water table. This rise gradually narrows down the feeding area for the plant roots. This rising water table drives the injurious salts before it, and capillary action finishes the work by bringing the salt to, say, the top 3in. of soil, where it does most damage. A fairly deep, narrow, furrow gives a better irrigation than a wide, shallow one. Crushed limestone, gypsum, or lime applied to very sandy soils helps to prevent erosion. Crooked furrows are one of the common causes of flattening and washing of furrows. The water cuts away the outside edge of the curves, and so gradually slits and widens the furrows. When this occurs, it is hard to push the water through or past this place in spite of opening up the outlet pipes to give more water. It is readily seen that such spots are getting far too much water, and a continuance of this trouble will mean seepage at no distant date, perhaps not exactly at this spot but at a lower level where a change of soil texture occurs. Green manuring in such a case may prove useful, because the soil is usually of a sandy, drift nature, and lacking in humus. Shorter runs for the water, say, two-and-a-half to three chains, may also help to remedy the trouble. Do not irrigate the same way every time, or use all the water you can, because it has to be paid for. In sandy loams it is advisable to alter the position of the watering furrows, especially if there is any salt in evidence, to give the water a chance to drive it down. One furrow each side of a row is usual, any salt showing will be found right under the trellis or out in the centre of a row. Again there is that class of land that retains moisture fairly well, and whilst one does not like to miss an irrigation, it is practically impossible to give it only half a watering with the usual number of furrows. Where this is the case, I find that unless the soil is very dry when water is due (and this can only be found by taking a shovel and digging down in several places) that one furrow is enough, say, on the left side of the row of vines one watering, and on the right the next. Soil textures alter so that one cannot lay down a hard and fast rule, but each settler should quickly learn what water is necessary on the different parts of his block. Good, deep cultivation should follow irrigating, and that just as soon as the implements can be worked on the land without damage. This first cultivation is principally to fill in the furrows which if left open would cause the soil to crack. A second cultivation should be given as soon as possible, and it will be found that the horses can pull the same cultivator let down another notch or so, and thereby provide a good deep tilth so necessary for the retention of moisture. It is quite common when passing blocks whilst water is in the main channels to see leaking gates. This will lead to seepage troubles, because lime concrete channels are not watertight, even if all the outlet pipes are sealed. Headlands should also be cultivated to prevent evaporation, the usual excuse for not doing so is that they are too hard to make up again." In the discussion which followed, Mr. Muspratt thought that a fall of 4in. per chain should be the average to aim for when laying out a block, although on very stiff clay soils this could be reduced. A discussion then took place on spraying vines.

NETHERTON.

September 10th.—Present: eight members and visitors.

THE KITCHEN GARDEN.—Mr. H. Johncock, who read a paper dealing with this subject, said the garden on the farm was, as a rule, the most neglected of all side lines connected with farming. That should not be, because a garden gave the homestead a pleasing appearance. Fruit and vegetables taken from the garden direct to the kitchen were more nutritious and appetising than those that were taken several days from the garden before being used. There was also no doubt that the garden on the farm reduced household expenditure. If the house were situated in a suitable position, he recommended planting fruit trees around the outside, keeping a small patch in the centre for vegetables. A small assortment of fruit trees would be, say, 12 apples, four apricots, four peaches, four plums, two pears, two figs, two nectarines, making a total of 30 trees. Planted 15ft. apart, they would occupy about a quarter of an acre of land. In that assortment enough would be obtained to provide the household with fruit right through the winter, and

from the stone fruits mentioned ample would be obtained for jam and preserve making. Plums and apricots could be dried for winter use. Between the rows of trees two vines or gooseberry bushes could be planted. To have a full supply of vegetables, well-tilled land, plenty of manure and water, and thorough cultivation were essential. For turnips, beetroot, radish, &c., a piece of land about 20ft. by 10ft. would be required, two or three rows of each vegetable being planted. After about three weeks the same quantity of each seed could be sown until the first lot sown were ready for use. As the first piece of land was cleared, it should be re-sown again, and two or three crops off the same piece of land could be secured in one season. For carrots and parsnips, which were slower growing, not more than two crops should be grown in one season. The above vegetables should be sown in rows 1ft. apart and then thinned out to 4in. in the rows. Cabbages, cauliflowers, lettuce, peas, and beans were gross feeders, and required heavy manuring. A nursery plot should be made for raising seedlings of cabbages, cauliflowers, and lettuce. Enough seed to supply 25 to 30 plants should first of all be sown. These should be ready to transplant about four or five weeks after planting. The bed should be re-sown, so that when the first plants were ready a fresh lot of seed could be sown. Cabbages should be planted in rows 2ft. apart and 1ft. 6in. in rows. Cauliflowers 2ft. 6in. between the rows and 2ft. in the rows. Lettuce should be in rows 1ft. apart and 6in. between the plants. Broad beans could be planted in rows 2ft. to 3ft. apart and about 1ft. in the rows. When the plants were 4in. or 5in. high, the middle should be pinched out, and instead of one straight stalk, the plant would stool and develop 14 or 15 stalks. For French beans he suggested two rows 15in. to 18in. apart, and small furrows between for watering. Plenty of water was essential to the growth of beans. A space of 2ft. should be left and another two rows, 15in. apart, planted. Peas should be treated in the same way. For the first planting of tomatoes he preferred old jam tins for the seed bed. The bottom of the tin should be almost taken out and a cut made down the side and a string tied around to keep the tin closed. The tins should be filled with earth and three or four seeds sown in each tin. When ready to plant, the string should be removed, the tin opened, and the plants could be removed without the roots being disturbed. For later planting, the plants could be raised in the ordinary way. The land should be well worked and given a light dressing of manure and plenty of water. When the first fruit was setting watering should be reduced. Pumpkins of all kinds and cucumbers could also be grown successfully in that district. He preferred the apple variety, because they matured earlier than the long varieties, and they did not get tough. A discussion followed, in which Messrs. R. Castle, A. McLean, C. Wilkin, and C. Halls took part.

PINNAROO (WOMEN'S) (Average annual rainfall, 16.74in.).

September 5th.—Present: 14 members.

BREADMAKING.—Mrs. Williams read the following paper:—"The most important detail in breadmaking is the provision of good yeast. The following recipe is the best I have used, and it also will keep for several weeks:—Take three or four large potatoes, wash them well, but do not peel, cut into three or four pieces, and cover with three pints of water. Add a small handful of hops and boil well, until the potatoes are well mashed. Strain into an enamel or earthenware basin. Add, whilst hot, a cup of sugar and a tablespoonful of salt. When cold, mix a cup of flour with a small quantity of yeast into a smooth batter, and then pour into the basin. The yeast should not be used until it has a thick froth on top, which will be in two or three days. If a little stale yeast is added it will work much sooner. To 6lbs. of well-sifted flour add a tablespoonful of salt. Mix salt with the flour, and put in a small cupful of yeast, and sufficient warm water (not hot) to make a nice dough. The water that the potatoes have been cooked in can be used. Mix by gradually working in the flour from the sides. Bread dough should not be stiff and hard, but it must contain enough flour to make it smooth and elastic. Knead the dough for 10 minutes or so and cover, and allow it to stand all night. A straight-sided dish is to be preferred for mixing, so that one can readily see when it has risen enough. The dough should be covered so that it does not dry on top. A crusted dough means streaks in the loaf. Next

morning cut down the dough and knead it thoroughly. A dough that is of the right consistency will require no flour on the board at the second kneading. Flour worked in at this stage has a tendency to cause streaks in the bread. Always knead with the palms of the hand, the fingers merely keeping it from spreading too far. Kneading when shaping the loaves should be done thoroughly to break up large bubbles of gas and distribute them evenly. Put the shaped loaves into warmed, greased bread tins, and place these at the side of the stove for about half an hour. Bake in a moderately quick oven for one hour. The bread should be taken out of this as soon as it is baked and allowed to cool uncovered on a wire rack. A small piece of butter rubbed over the top crust while it is still hot gives the bread a texture and flavor that many people enjoy." In the discussion that followed, Mrs. Sands thought it better to cover the bread when it was taken from the oven. Several members took a copy of Mrs. Williams' recipe.

PINNAROO (Average annual rainfall, 16.74in.).

October 3rd.—Present: nine members.

BLACKSMITH SHOP ON THE FARM.—Mr. F. S. Jones, in the course of a paper dealing with this subject, said in setting up a shop, an endeavor should be made to secure the best and most convenient position away from other out buildings. Old iron and timber could be used for the walls, but a good roof should be erected, because tools which would be of great value would be kept in the shop. In fitting out the shop there were some tools that were absolutely necessary, and continually being used, whereas others were only called on occasionally. The anvil and blower, vice, drilling machine, stocks and dies, hacksaws, and an assortment of wrenches, files, and punches were of great assistance in repairing the various machines and implements. The greater portion of those were frequently offered at sales, and could usually be purchased at a reasonable figure. To be fully equipped as a repair shop, the bush carpenter's shop should be amalga-

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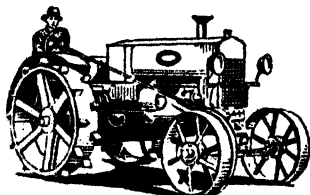
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mated with that of the blacksmith. The majority of machines contained a proportion of woodwork and it was useless to commence to overhaul without having a few of the most commonly used carpenters' tools close at hand. An assortment of nuts, bolts, washers, &c., within reach was also of great benefit. One should not attempt to repair a machine, knowing that the necessary bolts or the equivalent in the making were not on the spot. Although only a few in number, one was amply repaid by having them handy when they were needed, and the time and labor saved would more than account for the interest. "Find a place for everything, and keep everything in that place." Unless the farmer had had a good deal of experience no attempt should be made to do large and heavy jobs, or work that required accurate setting. In the latter case the job might appear quite all right, but when set in position it would be found to have a decided wobble, consequently worn bearings would follow. Repairs such as those just outlined should go to the tradesman. Apart from machinery and implements to be repaired there were numerous other things that come quite within the province of the amateur. Of these, plough chains, if used, were one of the most important items to be kept in good order. Not only was it much better to have them minus so much wire, but by keeping them evenly paired much would be done to minimise the risk of sore shoulders. Hame hooks could also be easily repaired. All plough swings and attachments could be made in the farm shop, and numerous other things so necessary on the average holding. In the discussion that followed, Mr. H. Ledger believed that coal was not necessary, but good fuel could be made from mallee roots burnt to charcoal.

BARMERA, September 8th.—Fifteen members attended the August meeting, when an address, "Manuring," was given by Mr. H. F. Levien. The speaker also gave a practical demonstration of vine grafting.

CLAYPAN BORE, September 15th.—Mr. F. G. Haman read a paper, "Care of Horses," and a good discussion followed.

KAROONDA, September 3rd.—Mr. A. Stevens delivered an address, "Co-operation," and a keen discussion followed.

MONARTO SOUTH, September 13th.—A short paper, "Shearing," was read by Mr. H. Rayson, and an instructive discussion followed.

MURRAY BRIDGE, July 22nd.—The Director of Agriculture (Professor Arthur J. Perkins) attended the meeting and delivered an address, "Summer Fodders."

A further meeting was held on August 19th, when the subject "Horse Power v. The Tractor" was debated.

PARUNA.—At the August meeting of the Branch a paper, "Tractor on the Farm," was read by Mr. H. Wooding, and an interesting discussion followed.

WAIKERIE, September 20th.—Thirty-three members and nine visitors attended the meeting when an address, "Citrus Culture," was given by Mr. F. Olorenshaw, of the Renmark Branch. During the afternoon a demonstration of citrus pruning was given by Mr. Olorenshaw.

WYNARKA, September 17th.—A paper, "Power Farming," was read by the Hon. Secretary (Mr. M. Blacket), and an interesting discussion ensued.

SOUTH AND HILLS DISTRICT.

CHERRY GARDENS (Average annual rainfall, 35.03in.).

October 7th.—Present: 12 members.

WHITE ANTS AND NATIVE TIMBER.—An interesting discussion took place on this subject. Mr. Jacobs said that white ants were prevalent where little or no timber was growing. He was of the opinion that red gum was the most resistant and was generally considered to be the most suitable timber for fencing purposes. The next in favor was stringybark, although that wood was sometimes badly attacked in some districts; it was the most easy to obtain. For building purposes, where the timber came in contact with the soil, it was considered best to use Western Australian jarrah.

CYGNET RIVER.

August 12th.

Mr. L. H. Moar read articles dealing with the subject "Fruit Tree Pruning," and an interesting discussion followed.

EUCALYPTUS OIL DISTILLATION.—On September 2nd a further meeting was held when the following paper was read by Mr. E. Burgess:—"There are three points that should be considered before distillation is carried on. First, there should be not less than 250 acres of dense leaf land to warrant the erection of even a small distilling plant; secondly, a good supply of water; and thirdly, the site of plant. This should be on the side of a bank or small hill about 10ft. high, so that the leaf can be carted to the top side and then be worked down hill into the still or digester. The stokehole can be made in the bottom of the hill, which will also facilitate the removal of ashes from the furnace. For the derrick for lifting the leaf out of the wagon and the distilled refuse out of the still, a good strong tree can be made to serve the purpose of a mast, failing that, a strong, straight log firmly set in the ground, with wooden stays on two sides to prevent it shifting, can be used. The boom should be of oregon, free from knots, 9in. x 5in. or 12in. x 8in., according to the weight that has to be lifted. The peak of the boom, where the lifting blocks are attached, should be one-third higher than the mast head, thus putting most of the weight on the foot of the mast. The height of the derrick head should be three times that of the top of the still or digester. I favor the 1,600-gall. to 2,000-gall. cement digester with a steam boiler. It is a distinct advantage to have a conical digester; for example, one 6ft. deep should be 5ft. in diameter at the bottom and 6ft. in diameter at the top, one 8ft. deep should be 6ft. in diameter at the bottom and 7ft. 6in. at the top, but on no account should the depth exceed 8ft., because the leaves will set too tightly and prevent the steam penetrating all the leaves to extract the oil, thus causing considerable loss on each distillation. The tapering digester has two advantages. First, it causes the leaves to press tightly and evenly against the side, consequently, the steam is forced through the whole pack of leaf; secondly, when the distilled refuse is being emptied there is no friction against the cement sides, and this reduces the strain on the lifting gear. The boiler can be made out of an old boiler shell, and the firebox out of an old Cornish boiler with ends put in to make it water tight. It is not necessary to have a pressure of more than 10lbs. to the square inch. All that is needed is something to generate a quantity of steam which is passed into the digester under low pressure. A new 400-gall. tank would serve as a boiler to generate steam sufficient to work an 800-gall. digester. When the leaf is old, say, from 4ft. to 6ft. high, it can be cut with the ordinary reap hook. Then it should be rolled and burnt, and, if possible, a crop of oats put in with 100lbs. of superphosphate to the acre. On ordinary leaf land that would more than pay for clearing the land and would have the effect of checking the growth of the mallee, teatree, and other worthless bushes that grow with the narrow leaf. After the land has been once treated in this way the leaf should be cut as near the level of the ground as possible with slashes. The narrow leaf could then be easily forked into heaps. All other bushes left on the ground could be burnt, and after the scrub has received this treatment for a few seasons the inferior scrub dies out, the narrow leaf makes more vigorous growth, and consequently a higher yield of oil is secured."

KANGARILLA.

August 15th.—Present: 23 members.

POTATO CULTURE.—Mr. L. Smart, who read a paper dealing with this subject, said the winter crop of potatoes should be planted at the end of June or early in July, the spring crop during August or early in September, and the summer crop at the end of December or early in January. A good supply of well-rotted farmyard manure, bone super, guano super, or potato manure should be applied to the land intended for the potatoes, and it should be well worked both before and after planting. Finally, good, clean, graded and imported seed should be sown. For June planting he recommended "Up-to-Dates" or "Carmen." A good sandy loam on hill sides was to be preferred for June

planting, on account of the severe frosts in low-lying country. Prior to planting the land should be dressed with farmyard manure, and after the land had been ploughed the seed could be set out in rows about 2ft. 6in. apart. He preferred to use the dibber and drop the sets in about 14in. apart. Next, super should be sprinkled on the plot at the rate of about 5cwt. to 6cwt. to the acre, and the seed then covered with a hoe. A few weeks after planting and just before the plants began to show through the ground, the harrows should be run over the land. That would check the growth of weeds and help the plants to come through. When the plants were about 8in. high, the horse hoe should be worked between the rows, whilst the weeds close to the plants could be killed with a hand hoe. A fortnight later the plants should be earthed up. After digging, if the potatoes were to be marketed, it was a good plan to grade them into three separate samples—large, medium, and small. For spring planting he favored heavier soils, preferably black flats. Such land, with favorable weather conditions, would yield very heavy crops if ploughed in June to a depth of 6in. or 7in. and then harrowed. When planting was done in August or early in September, he favored "Carmen," "Scotch Triumph," and "Up-to-Date." For the spring crop it was not advisable to plant before the tubers began to shoot. For summer planting a sandy soil was most suitable, the land being well worked before planting. Small round seed were the most suitable for summer planting, and any of the potatoes previously mentioned, in addition to "Snowflakes," were prolific yielders. After planting, the land should be harrowed and rolled to conserve moisture. Should heavy rain fall just after planting, it was advisable to run the harrows over the land. In the discussion that followed, Mr. R. Morphett considered that "Snowflakes" were the best variety for summer crops. Planting 3ft. between rows and 2ft. between sets gave best results. Mr. L. Smart said he used cut seed for winter and spring planting, and round seed for summer crops. Mr. Morphett favored earthing up summer potatoes because it prevented the tubers becoming green, the crop could be dug easily, and weeds were checked by working the soil. Stable manure was not recommended for summer crops because it had a tendency to become dry. Planting could be done more quickly by planting in the furrow and ploughing in on the seed than with the dibber.

RAPID BAY.

August 30th.—Present:—27 members.

PREPARATION OF THE CLIP.—Mr. G. Stacey, who read a paper dealing with this subject, said it was a good plan to keep the sheep yards free from dirt and rubbish, so that when the sheep were being handled or drafted dust would not settle in the wool. To grow a good fleece of wool, the sheep should be kept in fair condition all through the year. Shearing should be commenced at the approach of warm weather. The shed should be built with stone walls and iron roof, and that portion of the floor on which sheep had to stand should be covered with grating. For the shearing board and wool room he suggested the use of flooring boards, so that the floors could easily be kept clean. By yarding the sheep three or four hours before they were put in the shed, they would have time to cool off after travelling, and they would not make the grating so dirty as when driven straight into the shed from the paddock. About a week before shearing, it was advisable to go through the flocks and clean any dirty sheep. When the sheep were being shorn the belly wool was first removed, and it should be picked up and placed in a bale. After the sheep was shorn the fleece should be picked up and thrown inside down on a table made of narrow strips of wood. All small locks should be picked off and thrown under the table. The fleece would then be ready for skirting. Only those pieces of wool that were not equal to the standard of the fleece should be removed and thrown into a bale or basket. Next, the fleece should be rolled. The sides should be turned in first and the fleece then rolled from the tail end towards the head, allowing the wool on the shoulders of the sheep to show on the outside. All very heavy and yellow fleeces should be kept separate. The bales should be tightly pressed, of equal weight, and each bale branded in the same position with a description of the

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wool. If there was only a portion of a bale of pieces and belly wool, he suggested placing them into one bale, but the sweepings and locks should be placed in a separate bale. An interesting discussion followed.

RAPID BAY.

October 4th.—Present: 25 members.

ARSENIC FOR DESTROYING TREES.—Mr. J. Morris read the following paper:—“Arsenic has not been used to any great extent for destroying trees in South Australia, but in New South Wales it is used on a very large scale, and it has proved an effective and cheap method of destroying waste timber. A little has been used in this district with satisfactory results. The quantities that were used in this district and which proved most effective are as follows:—1lb. of arsenic and 2lbs. of washing soda to 4galls. of water. Too much care cannot be taken in preparing the poison, because the greater the care in mixing the better the results. If the poison is mixed correctly a few spoonfuls is all that is needed to kill a very large tree. A kerosine tin is the most suitable article in which to mix the poison. A gallon of water should first be placed in the tin and brought to a boil, then add the washing soda, and stir until it is well dissolved. After being mixed into a thick paste with cold water the arsenic is then added, and care must be taken not to allow the mixture to boil over; continual stirring will prevent this. The mixture should be boiled for an hour or a little longer, and one must be careful not to stand in the fumes of the arsenic, because they are injurious to health. After being boiled for an hour, the remaining 3galls. of water should be added, and the mixture will then be ready for use. A ring should be cut round the tree to be poisoned, just through the bark, so that when two or three spoonfuls of the mixture are applied the poison strikes the sap. The cut in the tree should not be more than 10in. from the ground. I advise March and April as the best months to poison trees in this district, because the sap of the tree is going back in these months, and as the poison follows the sap this ensures it getting at the root of the tree. Ten days after a tree has been poisoned with arsenic the leaves begin to wither, and in a few more days the leaves have a black appearance. A tree poisoned with arsenic will not throw out suckers, as is the case when rung in the ordinary way. An old teapot with a long spout is a very good article in applying the poison, because it prevents waste. In wattles, where stringy bark saplings are very thick, this is the best method of destroying them, because if you have to cut them down the wattles are injured. Four gallons of poison is sufficient to poison an acre of saplings, allowing them to be fairly thick. Two men can ring and poison an acre in a day; the cost of clearing that acre costs about 26s., allowing 12s. 6d. per day for wages and 1s. for arsenic. This mixture is also very useful for destroying noxious weeds on the farm, and if sheepskins are dressed with it it will protect them from the attacks of weevils.”

URAILDA AND SUMMERTOWN (Average annual rainfall, 44.25in.)

August 4th.—Present: 10 members.

ASPARAGUS GROWING.—Mr. G. Hoffmann read the following paper:—“Asparagus growing is a remunerative occupation if carried out properly. Three important things are necessary—good soil, good plants, and plenty of water. Well-drained black sandy soil is the ideal class of land for asparagus. Brown loams or heavy black soils will also grow very good crops, but whatever class of land is cultivated, it must be heavily dressed with manures rich in nitrogen. To grow good crops, the asparagus must grow very rapidly, otherwise it becomes tough and stringy. To get the best results a heavy coat of stable manure should be trenched into the soil before planting. There are two well-known varieties which give first-class results, they are “Palmetto” and “Connover’s Colossal.” The seed should be sown in drills 12in. apart and the plants thinned out to about 2in. apart. Keep the young plants well hoed and watered all through the summer in order to obtain good, strong plants for early spring planting. One year old plants planted out in the bed give the best results. Asparagus plants are composed of male and female plants. The male plant bears 50 per cent. more shoots than the female, so it is advisable, wherever possible, to have as many male plants as possible in the bed. It is necessary to leave the plants two years in the nursery. The second year the plants will bloom and bear seed. Both male and female plants bloom

together, but only the female plant bears seed. When the seed has set, those plants carrying seed should be weeded out, leaving only those without seeds and those with a very limited number of seeds on the young bushes. It will possibly happen that a large percentage of the plants will have to be thrown away if the grower intends to follow that rule. Planting.—Having dug or trenched and worked the land down finely, make the drills 3ft. apart and about 5in. deep, and the same in width, and plant the young plants 2ft. apart. Trim off the roots until they are about 2in. to 3in. in length, and spread the roots of the plant evenly over the bottom of the drill, then close the drills. About one month later the first shoots will show above ground. The land should then be hoed lightly to keep the soil loose and free from weeds, and when there are signs of the land becoming dry, it should be watered freely. It is not advisable to cut asparagus until the third year after planting, because this weakens and sometimes kills the plants. A bed of asparagus with proper treatment will last about 50 years, so that the plants should be allowed to become well established, which takes about three years. The cutting season in the hills commences about the 1st of October and continues until the middle of December, the average cut per season from a rod of well treated asparagus being about 70 to 80 bundles, varying in price from 1s. 3d. to 9d. per bundle. When cutting is completed for the season, give the bed a good dressing of bone manure or bonedust, and, if dry, irrigate freely until autumn. The "spears" for next year's crop are formed during the summer, and if they are given a good dressing of manure and plenty of water a large number will develop. When the asparagus is about 6in. above the surface it should be cut off about 3in. below the surface, and made into bunches about 3in. in diameter. Pack with all the heads level. Tie the bundles in two places. Cut the bottoms level, give the asparagus a good rinsing, and it is ready for market.

BALHANNAH, August 22nd.—The August meeting took the form of a "Question Box," when a number of interesting subjects were brought forward for discussion.

KANGARILLA, September 19th.—Mr. G. Connor addressed the meeting on the subject "Top Dressing Pastures." Mr. F. Steer gave a report of the 1924 Annual Congress.

LONGWOOD, September 13th.—The monthly meeting was held at Mr. A. Gurr's homestead, and members and visitors inspected the poultry plant. Mr. W. Filling gave an interesting account of a trip he had recently made to Tasmania.

MOUNT PLEASANT, September 19th.—The Hon. Secretary (Mr. P. Hanesler) read a paper, "Power Farming," which aroused a keen discussion.

PORT ELLIOT, September 17th.—An interesting report of the 1924 Winter School for Farmers was given by Mr. J. P. Colebatch. Other subjects of local interest were brought forward and discussed.

ROCKWOOD, September 6th.—Mr. G. Mudge read a paper, in which he related his experiences during a trip to Yarcowie to attend a field trial of tractors.

STRATHALBYN, September 17th.—Reports of delegates who attended the Winter School at Roseworthy Agricultural College, Southern Conference of Branches of the Agricultural Bureau, and Hartley homestead meeting were received and discussed.

TWEEDVALE, September 11th.—Thirty-one members attended the September meeting when a paper, "Apple Growing," was read by Mr. F. E. Hein.

SOUTH-EAST DISTRICT.

KALANGADOO (Average annual rainfall, 33in. to 34in.).

September 13th.—Present: 11 members.

OATS v. COWS AND SHEEP.—Mr. W. Boyce read the following paper:—"In districts where oats are the main crop, farmers will have to turn their attention to other methods of making the farm pay. With the present price of implements, the poor demand for oats, and the ever increasing growth of motor

power, the outlook for oat growing on expensive land is anything but promising. Farmers on small holdings will have to go in for dairying, and those on larger holdings can turn their attention to sheep. Every acre must be stocked to its maximum capacity. All green timber that cannot be used for posts or cutting into sawn timber should be ringbarked and all fallen timber burned. I suggest sowing subterranean clover. It grows splendidly on all classes of soil in this district. If the land is sown with 1lb. of seed and 1cwt. of super to the acre before the first autumn rains, and then shut up from stock about September, and the clover allowed to seed, the second year a good coat of clover will be secured. Land treated in this manner will carry twice as many stock previous to sowing clover, and it will be possible to keep three sheep per acre on the better class of land in this district, once it is well clad with subterranean clover. To those who think the seed is too dear, I suggest putting in one acre as soon as possible after the first rains with 10lbs. of seed and $\frac{1}{2}$ cwt. of super. Keep the stock off the plot for one year and a large quantity of clover will be obtained. This can be put through a chaffcutter and sown over the land. This method is cheaper than buying seed, although I consider it cheap at 5s. per lb., because it will improve the value of the land £2 or £3 per acre."

ALLANDALE EAST, September 12th.—Mr. H. Jones read a paper, "Evidences of the Sea over our Lands," and an interesting discussion followed.

NARACORTE, August 9th.—Messrs. W. Loller and A. Langeludecke were chosen to represent the Branch at the annual Congress. Several other subjects of local interest were also discussed.

A further meeting was held on September 13th, when a paper, "Mixed Farming," was read by Mr. C. Bray. A keen discussion followed.

TANTANOOLA, October 4th.—The Hon. Secretary (Mr. R. Campbell) read a paper, "Power Farming," and a lengthy discussion followed.

TATIARA, September 20th.—A paper, "Power Farming," was read by Mr. W. Hutley. The meeting also discussed the subject, "Crop Competitions," Mr. Fisher reporting that arrangements had been made between the Show Committee of the Bureau to promote competitions under the scheme proposed by the Department of Agriculture.

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T. BUTTERFIELD,
Minister of Agriculture.

POINTS FOR PRODUCERS.

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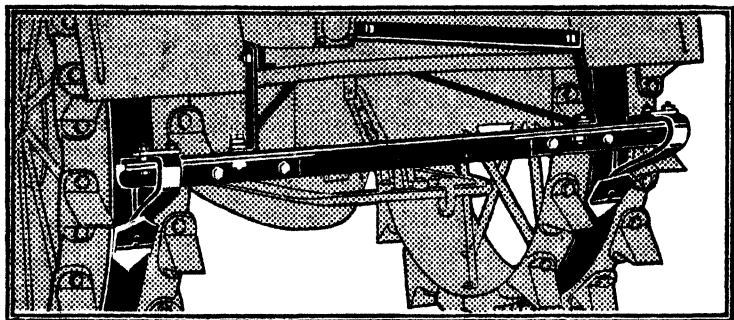
The regulations of the Dairy Cattle Improvement Act provide that bulls purchased under the Government Subsidy Scheme, shall be made available for a limited number of neighboring cows at a fee not exceeding 10s. per cow.

It will be seen from the following list that subsidized bulls are now fairly well distributed throughout the State and farmers and others wishing to obtain the use of any of these bulls should make application direct to the respective owners.

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Breed.	Bull's Name	Owner's Name and Address.
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Jersey	Milkclad VII. of Dalebank . . .	W. H. Axford, Jamestown
Jersey	Belle's Cheverell of St. James . .	A. W. Osborne, Auburn
Jersey	Doris' Greysprite of Oak Hill . .	J. H. Wilhelm, Mannum
Jersey	Audrey's Prince of Pella . . .	W. C. Eckermann, Marrabel
Jersey	Smuggler of Pella	J. R. Bergmann, Freeling
Jersey	Bachelor of Pella	C. W. Wagner, Eudunda
Jersey	Torcador of Pella	W. J. Richards, Narrung
Jersey	Milkclad II. of Dalebank	B. G. Neumann, Hampden
Jersey	Lord Grey III. of Dalebank . .	P. H. Pickering, Mypolonga
Jersey	Milkclad VIII. of Dalebank . . .	J. T. S. Bott, Murray Bridge
Ayrshire	Jim of Pine Hill	H. W. Holland, Millicent
Ayrshire	Jack of Pine Hill	W. V. Spehr, Rendelsham
Ayrshire	Bloom of Gowrie Park	J. L. Heaver, Mount Gambier
Jersey	Rose's Chief of Penrhyn	C. F. Sage, Cooke's Plains
Jersey	Sheba's First of Findon	F. W. Webb, Halbury
Jersey	Boomerang of Pella	W. A. Duncan, Marrabel
Jersey	Trojan of Dalebank	C. H. Giersch, Kapunda
Jersey	Hero of Dalebank	S. Shepherd, Kybybolite
Jersey	Admiral II. of Dalebank	T. Vogt, Saddleworth
Jersey	Baron II. of Dalebank	H. G. Collins, Mount Torrens
Jersey	Carnation's Lad of Dalebank . .	J. A. J. Pfitzner, Hampden
Jersey	Songster of Dalebank	Emil Martin, Mount Barker
Friesian	Heley Canterbury King	H. R. Gill, Pompootea
Jersey	Merden of Eudunda	R. A. Deuter, Yongala
Jersey	Chieftain of Eudunda	H. S. Wiese, Clarence Park
Jersey	Lord Grey IV. of Dalebank . .	E. L. Goode, Narrung
Jersey	Milkclad IX. of Dalebank . . .	F. Coleman, Saddleworth
Jersey	King Chris of Penrhyn	L. W. Frost, Saddleworth
Jersey	Burnside's Rhodes of Penrhyn .	O. Heyson, Myponga
Jersey	Roseworthy Conjuror	T. W. Smith, Narrung
Jersey	Mannikin III. of Dalebank . . .	W. H. McAllan, Woodchester

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[Replies supplied by Mr. Alan H. Robin, B.V.Sc., Veterinary Officer, Stock and Brands Department.]

Hon. Secretary, Collie Agricultural Bureau, asks best method to kill blood worms in water.

Reply—Dissolving bluestone in water at the rate of $\frac{1}{2}$ grain for every 1 gall. will kill the worms and render the water fit for drinking purposes for stock. This means, use 1 lb. 9 oz. bluestone for 1,000 galls. of water.

"E.L.C.," Brinkworth, reports foal, one week old, has weak fetlock joints; when trying to walk goes forward on fetlocks.

Reply—If the foal is able to stand upon its feet, time alone will usually effect a cure. If the fetlocks are so doubled over that the foal cannot possibly stand on them, forcible extension of the fetlock joints should be practised. Press backwards with the palm of one hand against the front of the fetlock, and at the same time place the other hand around the back of the heels and pull forward so as to forcibly extend the back tendons and bring the fetlock into a more normal position. Light splints should be applied to inside and outside of the leg and bandaged on so as to maintain the limb in its position. Remove the splints each day and massage the limb and replace the splints. Get the foal on its feet and try to make it exercise lightly. After a few days of this treatment the splints can usually be dispensed with, and the foal will soon make a complete recovery.

"H. C. A.," Farrell's Flat, has foal with injury to hock. The part is swollen and hard.

Reply—Rub in some of the following blister:—Red iodide of mercury, 1 part; lard, 10 parts. The following day clean up the blistered hock with some warm soapy water with a little antiseptic added. Dry carefully, and smear all over the blistered surface a little vaseline and olive oil. Turn foal out for spell.

"B. W. W.," Wudinna, has cow giving milk tinged with blood. After the cow has been milked flat lumps can be felt in the teats.

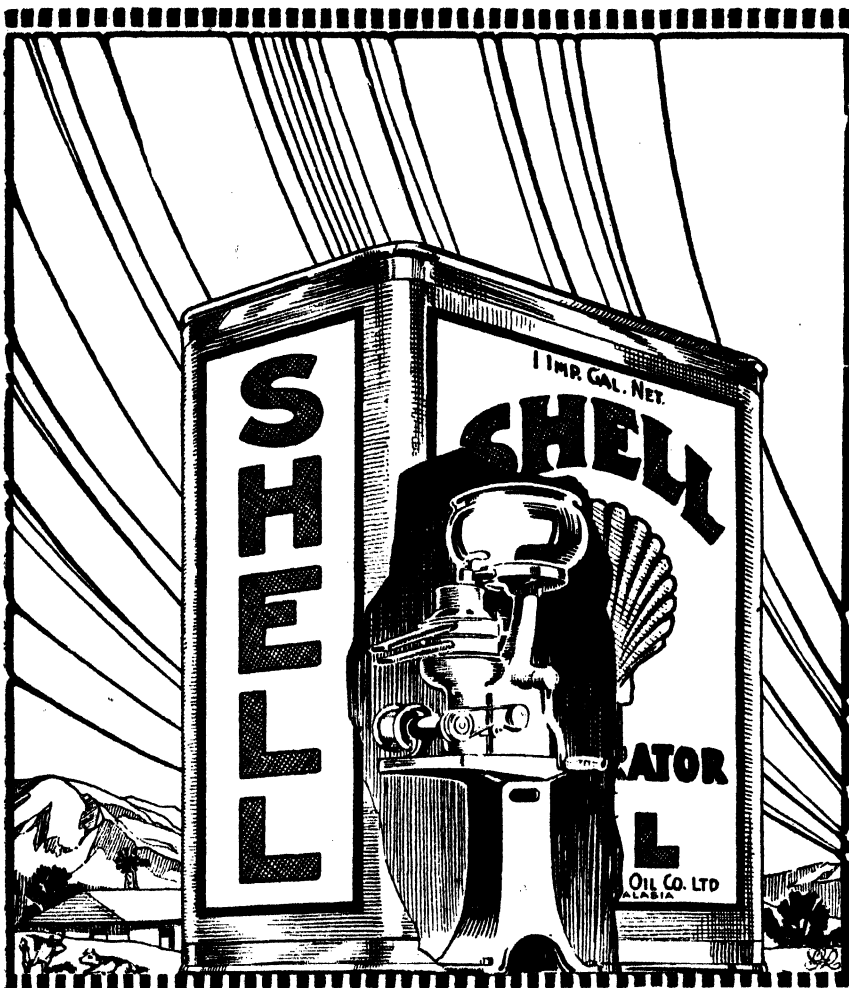
Reply—There is probably a growth forming in the teats, and only a qualified veterinary surgeon could attempt their removal safely. There has probably been some mild infection of the udder occur. Milk the cow very gently, and be thoroughly clean. Give her a saline purgative—Epsom salts, 1 lb.; ginger, 2 oz.; molasses, $\frac{1}{2}$ lb.; water, $1\frac{1}{2}$ pints. Subsequently give her one teaspoonful of sulphate of iron in the feed twice daily, and occasionally 4 tablespoonfuls of turpentine in milk as a drench. A change of feed would also be helpful.

Hon. Secretary, Agricultural Bureau, Verran, asks whether super given to stock entails any risk of poison.

Reply—Superphosphate is highly beneficial to stock when given mixed with feed or as an ingredient in a lick.

"O. E. A.," New Residence, reports horse very stiff in forequarters. Animal is only able to move about very slowly.

Reply—The horse appears to be troubled with rheumatism. A brisk purgative could be given, preferably an aloes physic ball. Following this the animal should be given daily doses of hyposulphite of soda (1 oz. to 2 oz.) in the drinking



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water, or a handful of Epsom salts in damped feed night and morning for some days. Feed on light diet, with green feed a part of ration if available. Keep her in warm, sheltered stables. Hot saline fomentations to the forequarters followed by massage is beneficial. As the stiffness wears off, gentle exercise should be allowed.

"G. A. G. H.," Nantawarra, asks for cause and treatment of "pink eye" in sheep.

Reply—The exact cause of this enzootic has not been definitely determined, though it is undoubtedly due to infection of some kind. Very probably the starting point is the entrance into the eye of particles of dust, seeds, or pollen dust from grasses during the flowering stage. The catarrh set up is probably followed by bacterial infection, and the disease may rapidly spread through a flock through contact, and almost undoubtedly through the agency of flies. All affected sheep should be immediately isolated from the healthy ones to lessen the chances of further spread. The eyes of affected sheep should be bathed in lukewarm boracic lotion, and a few drops of the following solution put into the eyes three or four times a day:—Sulphate of zinc, 2 grains; boric acid, 20 grains; distilled or boiled water, 1oz. In some bad cases, which might be more severely affected, the conjunctival surface of the eye may be brushed lightly with a 2 per cent. solution of silver nitrate, and immediately washed off with clear water or boracic lotion. All solutions used in the eye should be used at blood heat. Affected sheep should, if possible, be kept in shady situations. They could be shut up during the strong light of the days, and allowed out to exercise and graze towards sundown.

"H. J. S.," Maltee, asks treatment for stoppage of bowels.

Reply—To treat stoppage of the bowels, the affected animal should be kept off feed, drenched with raw linseed oil, 1½ pints; turpentine, 2oz., if necessary repeating the drench in half quantities at intervals of 24 hours until the bowels are relieved. Copious soap and water enemas should be given through the rectum, and the animal given teaspoonful doses of powdered nux vomica two or three times daily mixed up in a spoonful of treacle and placed on her tongue and back teeth.

"M. M. P.," Pyap West, asks:—(1) Can force pumps be obtained for injecting water into horses when treating colic? (2) Is it advisable to add turpentine to the water prior to injection? (3) For severe colic would you advise chlorodyne, rubbing the flanks, and administration of enemas? (4) Is it advisable to use a knife to puncture the skin to allow wind to escape? (5) If so, which is the best place to make an incision? (6) Name of chemist to supply veterinary medicines?

Replies—(1) There are special pumps for this purpose, but they are expensive and not altogether necessary. Quite satisfactory results can be obtained by the use of 6ft. or 8ft. of stout rubber tubing or hose pipe, one end of which is inserted by the aid of the oiled hand as far in the horse's rectum as possible after backraking, the other end being attached to a fair-sized funnel which is held by the hand up above the animal's hindquarters, so that fluid poured into the funnel with a jug will gravitate down along the tubing into the horse's intestines. About 4galls. or 5galls. of fluid (soapy water) can be passed in gradually in this way, taking 15 to 20 minutes over the operation. A little glycerine can be added to the soapy water if desired, and frequently makes it more effective.

(2) No; plain tepid water injected will exert the best soothing effects in such cases.

(3) In cases of windy colic, chlorodyne given per mouth would quieten the animal's violent struggles. Patient endeavor with enemas and pressure on flanks will usually succeed in shifting wind if persevered in with judgment.

(4) The suggested use of pen knife is not advised, except as an extreme resort, and though relief might in this way be effected the animal would most likely die subsequently as the result of peritonitis supervening. The operation of puncture in the flank can only be done with any degree of safety when done under aseptic conditions and with the aid of a special instrument (trocar and canula).

(5) The spot to choose for puncture is that point equidistant from the last rib, the point of the hip, and the edge of the backbones. It may be done in either flank, according to which side is more distended.

(6) Messrs. A. M. Bickford & Sons, or Faulding & Co., Adelaide.

ORCHARD NOTES FOR SOUTHERN DISTRICTS FOR DECEMBER, 1924.

[By C. H. BEAUMONT, Orchard Instructor and Inspector].

December is usually a very busy month for orchardists. Fruit picking and packing begins in earnest. We can and do grow good fruit, and it should be available to consumers at reasonable prices and be delivered to them sound and fresh. But, unfortunately, owing to faulty packing and handling, the retailer often gets the fruit bruised and unfit for sale, and therefore charges more for the fruit to make up the loss. Soft fruit should be handled in trays or punnets. Do not allow peaches, nectarines, or apricots to go to waste; be ready to dry them if necessary. Pamphlets about drying fruit can be obtained for a 1½d. stamp from the Department of Agriculture, Adelaide.

Woolly aphis and peach aphis must be kept in check; Black Leaf 40 is the remedy. Borers should be watched for; a tiny piece of cotton wool dipped in petrol and pushed in the hole and a piece of clay on top will stop the borer.

Young trees need special care now; rub off all unnecessary shoots and keep the soil loose about them; see that the stakes are properly secured. Young vines also need the same treatment and must be tied to the trellis as soon as possible. If a lot of shoots have started where big limbs have been removed, rub off those not wanted; this will also apply where grafting has been carried out. Cut out cleanly all dead timber and apply some thick paint to the new cut. Citrus trees will be the better of cleaning up.

Apples and pears will need a coat of arsenate of lead on them always; some lime-sulphur or wettable sulphur added will help to check "black spot." Spray for pear and cherry slug.

Look to your fences and see that no openings are there for rabbits or hares; they will be ready for trees when the green grass is done.

See that the birds do not get the fruit. To work 50 weeks to produce good fruit and then allow birds to use it is not good practice.

Vines must be closely watched for "downy mildew." If you have not got a pamphlet dealing with this pest, send in for one at once, enclosing a 1½d. stamp. Bordeaux mixture is the preventive. The disease has made its appearance already. Growers are strongly urged to make up their own spray as instructed in the pamphlet. This will also check black spot or anthracnose.

Commence budding

SMYRNA FIG CULTURE.

[A paper read by Mr. C. G. SAVAGE, Deputy Horticultural Instructor, South Australia, before the Australian Association for the Advancement of Science.]

In placing this subject before the conference I do it with the object of bringing before the members and public, an industry that is capable of wide extension through the irrigation areas along the River Murray. The burning question of the moment is that of markets for the dried fruit. In the dried Smyrna fig we have an article that can command the whole of the Australian markets, and at the present time shows a wider margin of profit than any of the other dried fruits produced in South Australia.

Prior to the war the annual importation into and consumption of dried figs in Australia was in the region of 225 tons; this quantity is doubtless capable of being greatly increased by publicity methods. The present production of dried Smyrna figs throughout the Commonwealth does not exceed ten (10) tons.

The Smyrna, which produces the dried fig of commerce, is grown largely around the Mediterranean; the main Commonwealth importations coming from Turkey. In recent years small parcels have been received from California.

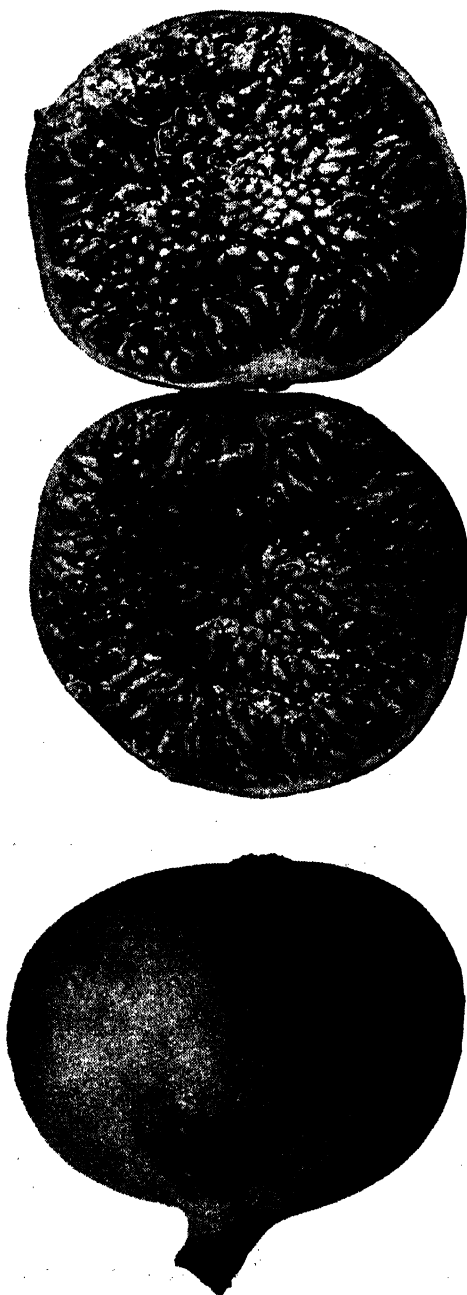
That dried figs can be produced in this State equal, and superior to the imported article has been demonstrated at the Experimental Orchard at Berri, River Murray. One will be pardoned for referring to a buyer's comment upon the figs received—"There is no question as to the product being a credit to the State and those responsible for its get-up." If figs can be produced to warrant such commendation in one orchard, the same results may be won from others.

ORIGIN AND BOTANICAL DESCRIPTION.

The fig, which is probably one of the oldest of our cultivated fruits, is indigenous to Asia Minor and Syria, and has been cultivated in these areas from early historical times. Through dissemination through the ages, it is now found in the wild state in many countries surrounding the Mediterranean. Frequent reference to it in the Bible shows that it was widely known and cultivated in the early Christian era, and probably formed a valuable food supply of that time.

The figs which are cultivated commercially belong to the species *Ficus carica*. The fruit is a syconus, being formed by a hollow pear-shaped capitulum bearing male or female flowers, or both staminate and pistillate flowers. The top of the fruit ends in an ostium or orifice, commonly known as the eye; this is surrounded by a number of bracts.

By far the greatest number of our cultivated figs contain female or pistillate flowers, and ripen their fruits without the ovules being fertilised. The Smyrna fig also contains pistillate flowers, but the



The Smyrna Fig. Ripe Fruit, whole and in sections. (Note fullness of pulp.)

fruit does not mature fully and ripen unless the flowers are fertilised. The Capri fig is the wild or goat fig; the fruits of which are inedible, but contain staminate and modified pistillate flowers; the staminate flowers producing the pollen which is required to fertilise the Smyrna fruits; the pollen is introduced to the female fruits from the male figs by the agency of a minute insect or fig wasp, known as *Blasophagus grossorum*.

SOIL AND CLIMATIC CONDITIONS.

The fig tree will flourish and produce regular crops over a wide range of soils; the climatic conditions more than the type of soil tend to limit the area over which figs can be profitably grown. The size and quality of the fruit is likely to be influenced by the soil in which the tree is growing. Better quality figs are usually grown on soils containing a fair percentage of clay than on light, sandy lands. Next to a well drained loamy soil, the fig delights in a rich sandy loam. The fig requires a fair amount of lime in the soil to produce the finest quality fruits.

This tree favors a warm, dry climate, but also grows well in a moist one. The difficulty with the latter climate, especially where cold nights are experienced towards the end of the summer, accompanied by heavy dews, is, that the fruit is liable to split and sour. The Smyrna fruit does not ferment so readily as the non-caprifried common varieties of figs, so that for fresh fruit purposes it can be grown over a wider area.

Owing to the ripening period extending late into the summer months, and often in the early autumn, a climate with warm, dry, nights is essential for the sun drying of the fruits. This being the case, one must look for the greatest extension of the dried fig industry along the Murray Valley. Experience teaches that soil and climatic conditions, assisted with irrigation, and thorough cultivation, are such that figs of the Smyrna variety can be produced in the Murray Valley equal to any grown the world over.

PLANTING LIMITED BY FROST.

The trees should never be planted in positions that are known to be subjected to very severe frosts, because in their young state they are very susceptible to injury from extreme cold, and that even whilst the plants are in a dormant condition.

This was demonstrated at Cadell in the winter of 1924, when many young Smyrna and Capri trees were cut to the ground by frosts. In frosty areas, however, if the trees can be carried successfully over the first three or four seasons there is less likelihood of serious damage by frosts owing to the greater elevation of the more tender branches.

PROPAGATION.

The fig tree is propagated from offsets and cuttings. The cuttings should be selected from well-ripened wood of the previous summer's growth, or from two-year-old wood. They should be cut in lengths of 9in. to 12in. In some instances the cuttings are set straight out.

in the positions the trees are to occupy in the orchard. Better results are usually obtained by striking the cuttings and growing the young trees in nursery beds for 12 months.



General View through Smyrna Fig Plantation, State Experiment Orchard, Berri, River Murray.

PLANTING.

The trees should never be planted closer than 20ft. apart, 22ft. or 24ft. being preferable. Under normal conditions they are strong growers. The greater distance will not provide more than sufficient room for their proper development.

The land should be deeply and thoroughly worked before the trees are set in position. The holes should be deep and big enough to receive the roots without crowding. A little bone-dust placed in the bottom of the hole and well worked into the soil before the tree is planted will assist the young plants in establishing themselves.

In replacing the soil in holes it should be worked in amongst the roots and well firmed down around them. Should the ground be dry at the time of planting the trees should be watered. Planting in the irrigation areas in dry winters is usually delayed until the first irrigation of the season.

PRUNING.

The tree when set out in the orchard should be headed back to within 18in. to 24in. of the soil. It should be pruned vase-shaped, and a solid foundation built in the lower branches during the first three or four years. The subsequent treatment consists in removing crossing shoots and spent fruiting wood.

The crop is borne on wood of the current season's growth. A single fruit is borne in the axil of a leaf, and as the branch extends new leaves develop and other fruits grow. Should the vigor of the tree diminish or the annual extensions become weak, systematic pruning of the trees should follow to produce strong annual wood for carrying satisfactory crops.

CULTIVATION AND MANURING.

Deep winter and spring ploughing is essential for the proper aeration of the soil and the conservation of moisture. Thorough summer cultivation should be carried out to keep the soil in good tilth, destroy weeds, and to reduce the loss of soil moisture by surface evaporation to a minimum.

Most of our Murray Valley lands are deficient in organic matter; consequently in nitrogen. Any manure that will make good these deficiencies will tend to improve both quantity and quality of fruit and to stimulate growth.

In the absence of sufficient supplies of stable manure, green manuring must be resorted to. Crops for this purpose are numerous, but owing to the leguminous plants (by the agency of micro-organisms which live upon the roots) obtaining nitrogen from the atmosphere, this type of crop is usually sown. In the River areas the cover crops are usually restricted to the field pea and tick bean. Both plants have much in their favor.

The green crops should be sown in early autumn, preferably just after rain, or with an irrigation. The seed should be sown at the rate of 1bush. to the acre in late February or during March. To assist the crop in making good growth and to increase the phosphoric acid content of the soil (all South Australian soils are more or less deficient in phosphoric acid) liberal applications of superphosphate, ground phosphatic rock, or bone-dust should be sown with the seed; say, about 2cwts. per acre.

* The green manure crop, if sown early, will be ready to plough of during July and August. The plants will have then reached

their maximum of growth, *i.e.*, will be in full bloom. The succulent growth ploughed under in the late winter will decay down rapidly and enrich the soil. If the seed is sown late the plants will not make rapid growth until after the winter has passed; consequently will not be ready to be ploughed under until September, or even later.



"Roeding's Capri" No. 1 Fig Tree.

The atmosphere and soil have then commenced to warm up; transpiration of water from the crop and evaporation of moisture from the soil has become intense. The result is that the soil rapidly becomes dry. Difficulty is experienced in turning the green crop under. Decomposition of the plants is very slow owing to the dryness

of the soil, and great difficulty is experienced in bringing the soil into good tilth during the summer. The fig trees may suffer from faulty handling of the green manure by the lack of soil moisture in the spring months.

Further applications of superphosphate, together with a nitrogenous fertiliser, in the spring months are advisable. Superphosphate at the rate of 2cwts. or 3cwts., and sulphate of ammonia or nitrate of soda at 1½cwts. to 2cwts. per acre, given in one or more dressings prior to irrigations, are recommended.

Do not over-water. Aim at keeping the soil well supplied with moisture. Experience alone is the only guide in relation to the amount of water necessary to keep the soil in good condition from irrigation to irrigation.

HISTORICAL.

Some 30 odd years ago the South Australian Chamber of Manufactures imported into this State from Smyrna the Lop Ingir Smyrna fig, and what is now known locally as the large-fruited Capri fig. Owing to the absence of the fig wasp, though both the Capri and Smyrna trees bore crops of fruit, the female figs were not caprified, and fell from the trees in an immature condition, as did the Capri figs also.

Mr. T. B. Robson, of Hectorville, who has some of the original trees in his possession, and to whom the honor is due for establishing the Blastophaga in Australia, fertilised some of these early fruits by artificial methods. In the first instance a small piece was cut out of the apex of the Smyrna figs, and a corresponding portion of a Capri fig, carrying staminate flowers producing viable pollen, was inserted in the opening. Several figs which were fertilised in this way matured and ripened. At a later date the pollen was collected from the Capri figs and blown into the Smyrna fruits by the aid of a rubber ball attached to a small pointed glass tube.

Though these methods could not be followed out on the commercial scale, they had their value, in that by this means it was established that the Smyrna fig could be satisfactorily grown if the Blastophaga could be introduced. It is interesting to note that the seeds from some of these artificially caprified fruits were sown and several seedling fig trees were raised. One of these trees proved to be a large fruited Capri, which matures its spring crop of figs somewhat later than the other varieties, thus extending the period of caprification, which is very desirable, as more Smyrna figs may be fertilised, thus increasing the yield of fruit.

The first importation of Capri figs containing the Blastophaga in the larvæ form was made by Mr. Robson in March, 1905, from California, where the insect had been established some six or seven years previously. Though the figs arrived in good condition, it was too late in the season to establish the insects; the weather being cold, the Blastophaga perished. Further consignments were received from Mr. G. C. Roeding, of California, some seven in number, covering the period from March, 1905, to April, 1909; through various causes the wasp was not established.

As the *Blastophaga* had been successfully established in South Africa in 1908, Mr. Robson received two packages from there in August and September, 1909. On September 15th the insects began to issue from the figs, and established themselves in Mr. Robson's Capri trees. Since that time no difficulty has been experienced in carrying the insect over from season to season.



"Roeding's Capri" No. 3, heavily laden with the Spring or Prosehl Crop of Figs.

From supplies obtained from the Hectorville trees the *Blastophaga* was successfully established in Western Australia in 1911; at the Adelaide and Blackwood Experimental Orchards in 1912 and 1913;

and thence in 1917 at the Berri Experimental Orchard. Consignments were also sent to, and the wasp established in, the various centres of the Commonwealth.

DESCRIPTIONS OF THE CAPRI AND SMYRNA FLOWERS AND FRUITS.

As previously mentioned, the Capri fruits contain both staminate and pistillate flowers, while those of the Smyrna contain only pistillate flowers.

The formation of the female flowers is somewhat different in the two varieties. The individual flower of the Smyrna fruit has a long, slender style and a one-celled ovary; that of the Capri is similar in formation, with the exception that the style is short, stubby, and hollow. It is in these modified pistillate flowers of the Capri fig that the female *Blastophaga* deposits her eggs, and which serve as the places of development of the larvæ.

The male flowers are carried towards the apex of the Capri fig, and the gall, or modified female flowers, are situated below them. The insect in emerging from the fig must necessarily pass through the staminate flowers, and when the pollen is being freely shed the wasp becomes covered with the yellow grains.

There are three crops of Capri figs, known as the spring (or profichi) crop, the summer (or mammoni) crop, and the winter (or mamme) crop.

The Profichi Crop.—This is the one which is used for caprifying the Smyrna figs, the fruits being produced in great numbers. The male flowers of these fruits supply an abundance of pollen, which is transferred to the Smyrna flowers by the agency of the fig wasp. The fruits may be of two kinds when mature; those which contain insects, and are known as insectiferous figs, and those which do not, and are designated polleniferous figs. The former develop normally, and keep dark green and plump until matured; the latter ripen early, turn yellow, and fall from the trees. The polleniferous are of no value for caprification purposes, owing to the absence of wasps to convey the pollen. The figs of this crop push out from the wood of the previous season's growth, and occasionally from older wood.

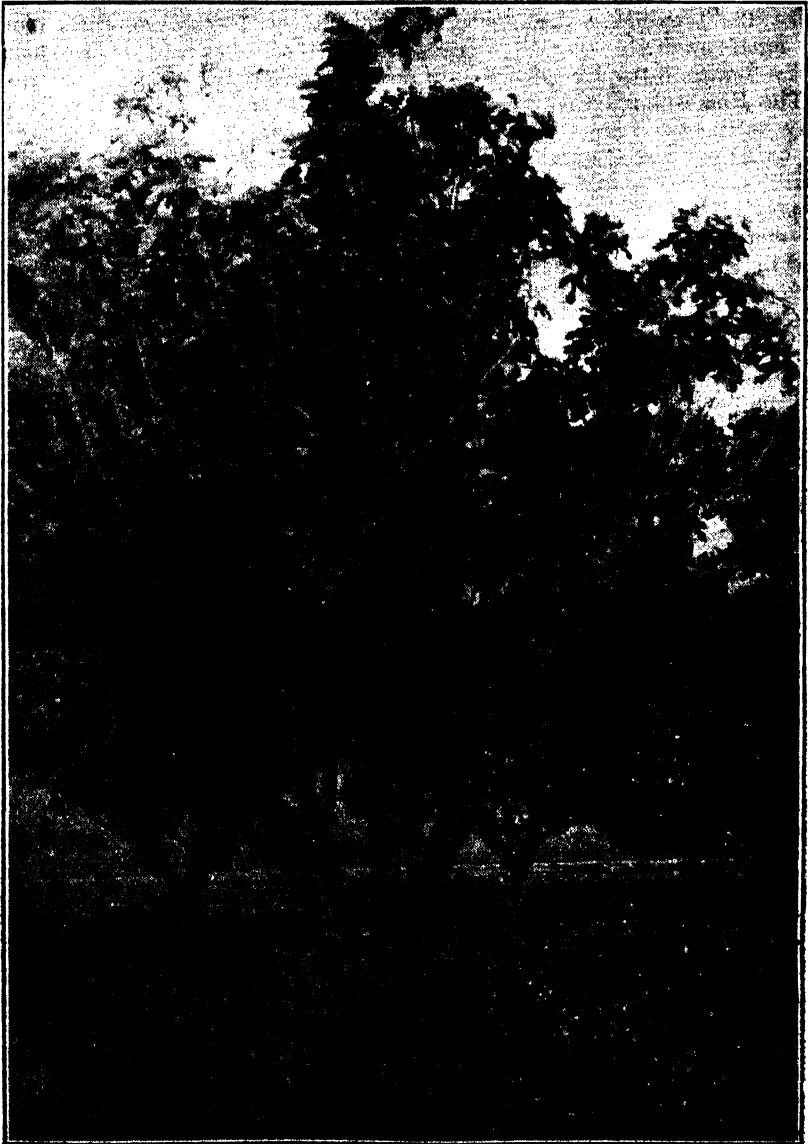
The Mammoni Crop.—The figs of this crop appear in the axils of the leaves on the current season's growth. The figs are few in number, and much smaller than those of the profichi crop, and are ready to receive the wasps as they emerge from the spring crop.

The Mamme Crop.—This crop is the one that carries the caprifying insect over the winter months. The figs appear in the same position on the tree as the preceding crop, but are produced later in the season. The staminate flowers of this crop rarely produce viable pollen.

The Smyrna Fig.—There are two crops of Smyrna figs. The brebas (or first) crop is very light, and owing to the absence of pollen in the mamme crop of Capri fruits, it is not fertilised, the majority of the figs falling from the trees in an immature condition. The remaining fruits ripen, but contain little flesh and are of poor flavor. The higos (or second) crop is the one which is caprified by the pollen from the profichi Capri figs, and produces the dried figs of commerce.

THE LIFE HISTORY OF THE "BLASTOPHAGA GROSSORUM".

The female wasp is less than an eighth of an inch in length, is black in color, and is winged. The male is a small, brownish-yellow insect, blind and wingless; this insect seldom leaves the male fig. There are usually three broods of insects, corresponding to the number of crops.



Large Fruited Capri Fig Tree.

of Capri figs. The first brood of *Blastophaga* issue in September here from the over-wintering figs, in which they have hibernated during the dormant period of the tree. At this season the very heavy profichi crop is noticed on the Capri trees. The male wasp hatches out first, seeks out a gall containing a female insect, gnaws a hole through the cortex of the ovule at the base of the style, inserts its extremely long abdominal extremity, and fertilises the female while she is still in the gall. The female insect enlarges the hole in the gall, and emerges from the fig through the eye. She crawls about the leaves and makes short, jerky flights, but on a windy day may be carried for a great distance.

The *Blastophaga* then enters the young Capri figs; the fruits need only be the size of marbles for the insect to enter, or may be as large as half-grown walnuts. She passes through the staminate to the modified pistillate flowers, searching out a suitable flower, her ovipositor is pushed down through the central duct of the style, and the egg is deposited in the ovary. The number of eggs that may be laid by a wasp is not definitely known, but probably amount to several dozen. It is claimed the female seldom lives more than four or five hours if exposed to the sun and wind, but lives longer inside the fig.

The second brood of *Blastophaga* appear in late November and early December. It is this brood that is used for caprifying the Smyrna figs. At this period a light crop of mammoni figs is seen on the Capri trees, and into these some of the wasps enter and oviposit. This crop of Capri figs carries the insect over the period between early to late summer, when the mamme crop of Capri figs is ready to receive it.

The third brood of wasps issue forth in late February and March, and enters the mamme Capri figs which carry the insect in a resting form over the winter months. The depositing of the eggs in the mamme figs stimulates fruit in a similar manner to that of the fertilisation of the ovules in other fruits. The figs which the insects do not enter shrivel and fall from the trees, while those in which the wasps have oviposited hang on the trees throughout the dormant period.

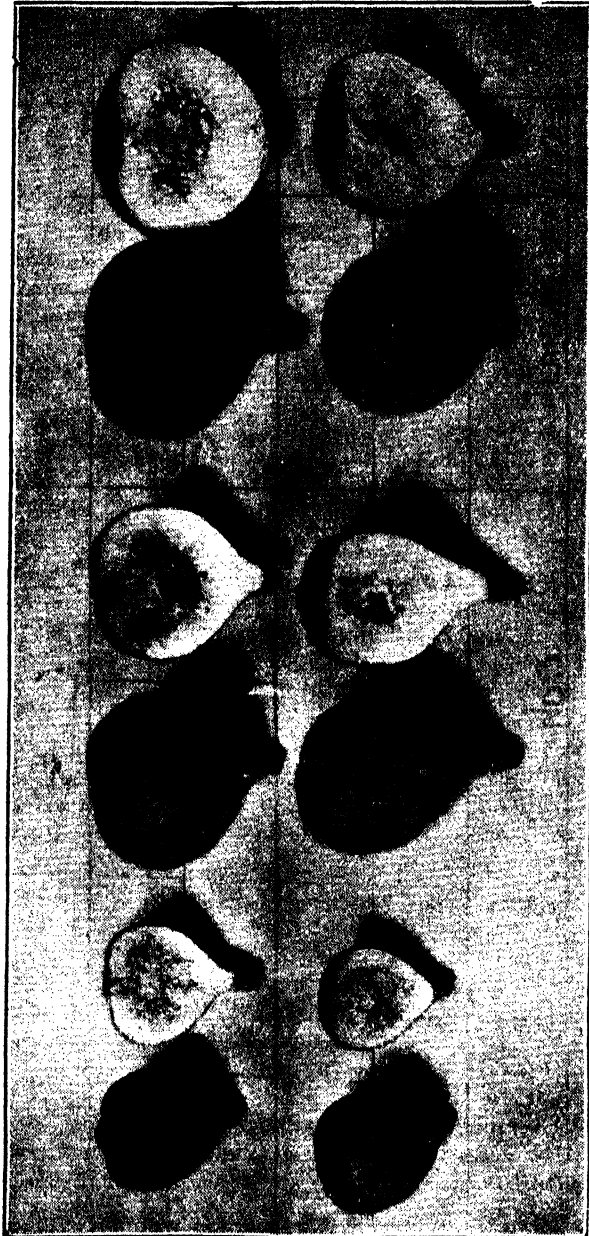
CAPRIFICATION.

The term caprification is applied to the process of fertilising the Smyrna fig with the pollen from the Capri fruit by the means of the *Blastophaga* insect.

As already mentioned, the higos, or second crop of figs, is the one that is fertilised, and produces the marketable Smyrna figs. These fruits are ready for fertilisation in late November and early December, at which period the wasps issue from the profichi, or spring crop of Capri figs. The staminate flowers in the profichi figs produce a plentiful supply of pollen, and the wasps passing through these flowers when emerging from the fruit become dusted over with pollen grains. The insect becomes covered with pollen to such a degree that it is often necessary for the wasp to divest herself of much of it by stroking her wings and back with her legs.

The Capri figs are gathered when the *Blastophaga* commence to emerge, and are distributed through the Smyrna trees. The Capri fruits tend to become soft around the eye, and the eye usually opens

prior to the wasps issuing forth. As the wasps leave the figs in the forenoon the fruit should be gathered either in the early morning or late afternoon, and placed in the Sunyna trees as early as possible in the morning.



"Prochi Capri" Figs. Top —Insectiferous (containing fig wasps). Bottom Row—Polleniferous (without insects).

The old method of distributing the Capri figs throughout the Smyrna trees was to string them on raffia or twine in clumps of four to six, and hang them in the branches. This method was costly, slow, and troublesome. The plan now adopted is to hang in the Smyrna trees small receptacles, such as baskets made from small mesh wire-netting, into which the Capri figs are placed. Each tree should be visited about every three or four days for a period of three weeks, and a fresh supply of wasp-laden figs placed in the baskets.

As all the Smyrna figs on the trees are not ready for caprifying at the one time, but keep developing for some three or more weeks, it is essential when planting the male trees to plant several varieties that will extend the time in which the fruits mature over as long a period as possible.

The ostium of the small marble-like female fig is closed by the overlapping scales. The *Blastophaga* forces her way under the thin edges of the scales, and after a struggle lasting several minutes works her way down to the centre of the fruit. The wings of the insect are usually shed, and left protruding from beneath the scales. The wings are visible to the naked eye, especially where several wasps have entered the same fig. On entering the Smyrna fig the *Blastophaga* begins searching for a suitable place to oviposit, but the flowers being unsuitable for the purpose she perishes. In searching among the female flowers the pollen grains are brushed from the insect on to the stigmas, and fertilisation of the ovules follows.

As the figs develop a rapid change takes place. The caprified fruits increase in size, become dark green in color; the distinct ribbed appearance disappears, the figs becoming nearly smooth. Should the wasps fail to enter any of the figs these fruits shrivel and fall from the trees in an immature condition. The fertilisation of the ovules stimulates the formation of sugar in the fruit. This is particularly noticeable when the unfertilised and caprified fruits of one of the ordinary varieties of figs are compared when thoroughly ripe. Many figs which ordinarily ripen without being caprified are much improved in flavor and quality when caprified; the fruit often grows to a much larger size.

The planting of the Capri trees throughout the plantation to obviate the work of distributing the figs is not recommended. The distribution of the wasp is very uneven when this practice is followed, the Smyrna fruits in close proximity to the Capri trees being over-caprified, and those at a further distance not receiving enough of the pollen-laden wasps. Figs that are over-caprified generally split as the fruit develops, due probably to the rapid expansion of the seeds, as in these the whole (or practically the whole) of the flowers are fertilised. In many instances the female figs situated at the greater distance from the Capri trees are not fertilised, and fall immaturely. The best method to adopt is to plant the Capri trees in a clump and to distribute the figs as described.

The number of Capri trees required to fertilise a given number of Smyrna trees is in the proportion of one male to 15 to 20 female trees.

Amongst the varieties of Capri figs which have come under my notice Roeding's Capri No. 3 has proved one of the most reliable varieties for carrying the wasp throughout the year, and for caprifying the Smyrna fruits. This variety is the first to mature the profichi crop.



Showing Wire Basket containing Profichi Figs ready for distributing through Smyrna Trees.

Roeding's No. 1 is a much smaller fig, which also carries the wasp throughout the season; it is valuable as a variety for extending the caprification period. The large-fruited and Robson's large-fruited also

produce the mamme, or over-wintering crop, and profichi figs develop later on these than on the No. 3. Roeding's No. 2 Capri does not carry the over-wintering figs, so that it has no value for harboring the insect throughout the winter months. The profichi crop is fairly late in developing, but not more so than the other varieties quoted; consequently it is not recommended.

HARVESTING AND DRYING.

The ripening period extends over three months of the year, during which time the figs ripen gradually, there being no rush of fruit at any particular time; so that a small staff of workmen can handle the fruit from a large plantation. At Berri the gathering of the fig crop commences in February and extends through till April, and at times even into May.

The fruit should never be gathered until thoroughly ripe; in fact, until it has commenced to wilt and hangs limp on the tree. Care must be exercised in picking the fruit to see that the stems are retained on the figs. This is very important in harvesting, as the stem improves the appearance of the finished article, whereas figs that are pulled from the tree without the stem being retained are always more or less damaged, and produce a ragged, unfinished product. In many cases the fruit is not picked from the trees, but is allowed to fall to the ground before being gathered. The fruit so harvested is in a more or less dried condition when gathered. Many of the small figs do not require further exposure to the sun before sweating. The whole of the crop at the Berri Orchard during the past season was allowed to fall. The quality of the finished article was superior and more even in color than that packed in previous years from the fruit gathered from the trees. The harvesting costs were much lower. It is interesting to note that where the wilted fruit was gathered from the trees two and a half pounds of fresh figs were required to produce one pound of dried, whereas where the fruit was allowed to fall and was gathered from the ground in a more or less dried condition only 1.42 pounds were required. The Smyrna fig does not sour or ferment so readily as does the uncaperified fruit that is usually grown for the fresh fruit market, unless exceptionally moist weather conditions prevail. The weather in the Mid-Murray Valley during the early months of the year is usually hot and dry; such conditions favor the ripening and drying of the fig.

The fruit is usually allowed to fall from the trees, and is then gathered into perforated dipping tins, in which it is immersed in a boiling brine for about half a minute. The brine is made by adding 3oz. of salt to each gallon of water used. The object of this operation is to fine down and slightly to crack the skin, to facilitate the evaporation of moisture from the figs. This will also assist in removing from the fruits any grit that has been gathered from the ground. The figs are then placed on wooden trays, and exposed to the sun to dry. The fruit should be turned in a couple of days to facilitate drying, and to prevent the larger figs moulding on the underside. When the figs are allowed to fall to the ground before being collected they are

always partially dried. In this condition loss of juice does not occur; consequently no special care is taken to see that the eye end is uppermost when spreading the fruit on the trays. With suitable climatic conditions the fruit will be sufficiently dry to sweat in four to six days. Should wet weather set in, the fruit-laden trays should be stacked and covered, otherwise the figs will be damaged by the rain, and perhaps by moulds. Towards the end of the drying season it will be found necessary to stack the fruit each evening to protect it from dew, opening it out each morning to the sun.



Showing Packets of Figs as placed on the markets. That on the left is used for 4 and 3 Crown Grades, the bottom packet holding 2 and 1 Crown Fruit. The central top figure is a block of 3 Crown Fruit with wrappers removed. The carton on the right was the original used, but has now been replaced by that on the left.

The sweating process takes about two weeks, during which time the fruit should be stirred up every three or four days. The object of this operation is to even up the moisture contents of the fruit. Some of the figs will be over-dried and some slightly under-dried, and by placing them together those containing too little moisture absorb some from the under-dried fruit. The fig is dry enough to sweat when it is still pliable, but does not exude juice when worked between the finger and thumb. From the sweat box the fruit is passed through the grader to sort it into various sizes. For guidance, the sieves used at the Berri Orchard are quoted. The sizes were: $1\frac{1}{2}$ in., $1\frac{1}{4}$ in., $1\frac{1}{8}$ in., and $\frac{1}{2}$ in. mesh. These four sieves give five grades of fruit. The small, together with the damaged figs, are sold for confectionery purposes and for the manufacture of fig coffee. The next two grades, which are labelled 1 and 2 Crown respectively, are packed in paper packages, and labelled choice figs. The top grades, which are designated 3 and 4 Crown, are packed in 11b. cartons. The four packed grades contain approximately the following figs per pound:—1 Crown, 32 to 38; 2 Crown, 22 to 28; 3 Crown, 18 to 20; 4 Crown, 14 to 16.

Before packing, the figs are washed in a cold brine (3oz. of salt to each gallon of water) to remove any grit that may have collected on them during drying operations, and are exposed to the sun for half a day to dry off the added moisture. The fruit is then placed in a steam bath for 10 minutes to 15 minutes. This process fines down and softens the skin, and may also destroy some of the insect eggs that may have been laid upon the fruit. The fruit is then weighed into pounds, and is packed into moulds of slightly less width and length than the cartons, the depth being greater to allow the fruit to be pressed without squeezing over the edges of the mould. Before placing in the moulds the fruit is slightly flattened between the finger and thumb. The first layer of figs is placed with the stem end down, and the top layers with the stem end uppermost. This method of packing has two main advantages: Firstly, the fruit presents a uniform appearance if opened on either top or bottom. Secondly, the tops of the figs, where the toughest portion of the skin is found, are towards the centre of the block of fruit, where the greatest amount of moisture will be. This will greatly assist in keeping the whole of the fig soft and pliable. The block of fruit is wrapped in grease-proof paper before placing it in the carton. Figs from other countries are often packed in $\frac{1}{2}$ lb., 1 lb., and 7 lb. boxes.

RETURNS PER ACRE.

In the Berri plantation well-developed Smyrna trees growing in sandy loam soil gave a return of 2,980 lbs. of dried figs per acre when the trees were in their eighth year. In the season just ended (the trees being in their twelfth year) 3,428 lbs. of dried fruit per acre was recorded. In all probability the returns will increase for a few years, as the trees have not attained full size.

During the past four years the dried figs have been sold on the local markets at an average price of £130 per ton. The gross return per acre, in the season just ended, was approximately £197.

Smyrna dried figs prior to the great war were imported at about £122 per ton. Allowing this to be the average price, when the local production reaches the Australian demand, and the average return of dried fruit per acre to be 30cwts., the gross return per acre would be £183.

The cost per acre of producing 3,428lbs. of dried figs approximated about £147, all labor being based on the union rate of pay, viz., 12s. 11d. per day. The expenses are made up as under:—

	£	s.	d.
Water rates and rent	3	5	0
Cultivation and irrigation	10	0	0
Manures	3	0	0
Caprifying	4	10	0
Harvesting	36	0	0
Dipping, spreading on trays, and drying	6	10	0
Grading	2	0	0
Washing and re-drying	1	0	0
Packing	52	0	0
Cartons and papers	13	0	0
Boxes	5	0	0
Interest on capital and depreciation on plant.	10	5	0
Total	£147	0	0

From these figures at the present time the net returns are in the neighborhood of £50 per acre; while the net returns would approximate £36 per acre with the price at £122 per ton. Should the price per ton fall to £100, and the costs remain constant, growers should be able to pay all expenses and still show a profit.

USES OF THE FIG.

The value of the Smyrna fig lies in the high-class dried article that it produces, and as such no other variety can compare with it. The dried fig is used medicinally as a mild laxative; it is also used extensively in confectionery and in making fig coffee. As a fresh fruit this variety will be largely used in preference to others as it becomes more widely known. The high quality of the fruit makes it most valuable as a dessert, jamming, or preserving sort.

DISEASES AND PESTS.

The fig tree is less liable to be attacked by fungoid diseases and insect pests than any of our cultivated fruits, and up to the present it has not been found necessary to give any treatment in this direction.

FARMERS' DAY AT KYBYBOLITE.

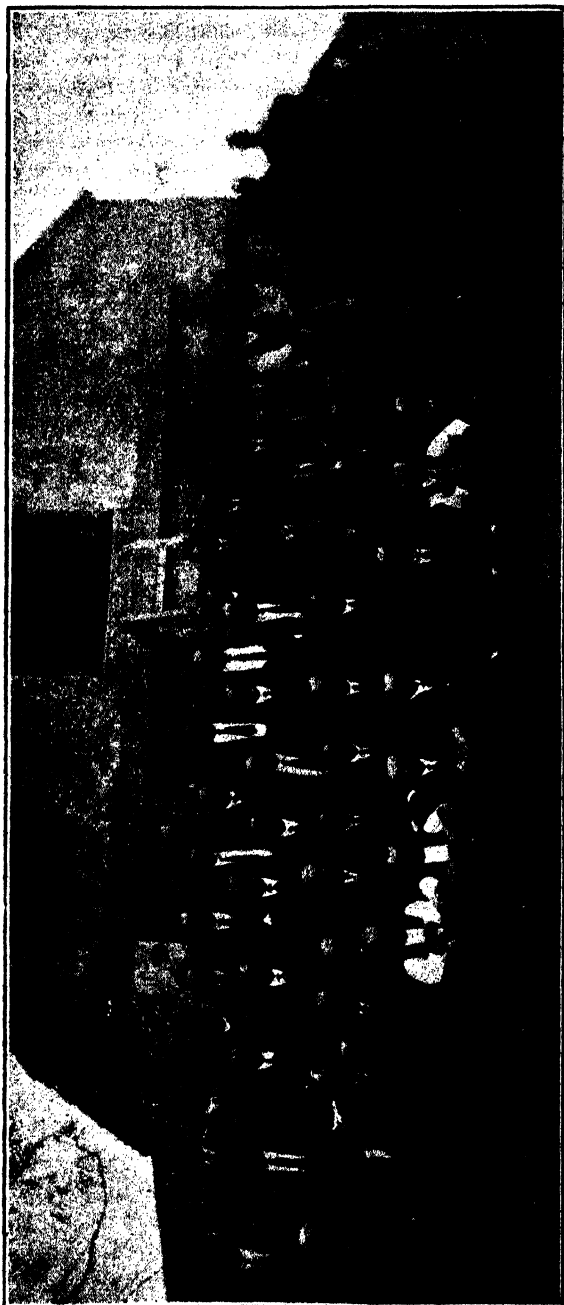
A party of nearly 100 members of the Tantanoola, Glencoe, Mount Gambier, Mundalla, Kalangadoo, Coonawarra, Penola, Naracoorte, Frances, Tatiara, and Kybybolite Branches of the Agricultural Bureau, including a number of members of the Kalangadoo Women's Branch, on Wednesday, November 19th, visited the Government Experimental Farm, Kybybolite. They were met and conducted over the farm by the Manager (Mr. L. J. Cook) and the Assistant Manager (Mr. E. S. Aleock), and accompanied throughout the tour of inspection by Representative M. D. Cameron, M.H.R., the Director of Agriculture (Professor A. J. Perkins), the Dairy Expert (Mr. P. H. Suter), and the Secretary of the Advisory Board of Agriculture (Mr. H. J. Finnis). Each visitor was supplied with a booklet setting out particulars of the operations on the farm, and history and plans of each field.

The farm consists of about 1,000 acres of land slightly undulating, which varies considerably in texture, color, and composition. The great bulk of the soils consists of comparatively heavy and cementy loams containing a large proportion of ironstone rubble over stiff clays of varying depths, and much lacking in the element lime. There is a fair amount of heavy working "crabhole" land. The climatic and soil conditions are such that attention is more particularly given to the cultivation of fodder crops for livestock rather than to growing grain for marketing. The area devoted to the various crops is as follows:—Oats, 190 acres; wheat, 80 acres; peas, 23 acres; barley, 16 acres; turnips, 16 acres; summer crops without irrigation, 6 acres; sown pasture, 124 acres; improved natural pasture, 40 acres. Practically the whole of this is included in the experimental area, and is divided into plots for the purpose of testing various systems of rotation or ascertaining the most suitable variety and best manurial dressing for these conditions.

ROTATIONS.

The rotations under test are the Norfolk four-course (turnips, barley, peas, wheat; one five-course (wheat, oats, three-years' Subterranean clover); two six-course (wheat, oats, and vetches for hay, turnips, barley, two-years' pasture, Italian rye grass and Alsike clover, and peas, wheat, turnips, barley, clover pasture, and oaten hay); and one two-course rotation (wheaten hay and peas). The last named is divided into five sub-plots, on which the relative advantages of ground rock phosphate, superphosphate, and lime are being tested.

An area of about 20 acres is divided into small plots, on which 28 different varieties of oats are under test; a similar area is divided into eight plots carrying different varieties of wheat. Fourteen varieties of malting barley are under observation alongside the plot carrying Cape barley.



Some of the Farmers who attended "Visiting Day" at Kyhybille Experimental Farm.

SOWN PASTURE.

No activity on the farm received greater attention from the visitors than the area given over to testing sown pastures. In addition to the area under Subterranean clover in the rotation test, 20 plots varying in size from three acres to five acres have been sown to Subterranean clover and Wimmera rye grass in mixture. On these, various forms of phosphates, potash, and lime are being tested. There are also two plots sown to Alsike clover and Italian rye grass mixed. The growth of the area of 10 acres sown to Crimson clover did not favorably compare with other clovers under observation.

NATURAL PASTURE.

Considerable attention is being given to the possibilities of improving natural pastures by dressing them with various quantities and forms of phosphatic manure and lime. There are now 10 plots under observation, the types of phosphates under trial being basic phosphate, aluminium phosphate, calcium phosphate, and superphosphate. A marked improvement in both the quantity and quality of feed is noticeable in every instance in which one or other of these forms of phosphates has been supplied. The outstanding feature is the increased development of clover growth on all plots that have received phosphatic dressings. It has been observed that the acid soluble phosphates have a very lasting effect in improving the pasture.

Both the sown pasture plots and those improved by manuring without cultivation are being permanently fenced. With the object of making a comparison of the carrying capacity of the different plots they are being grazed separately; the basis of comparison adopted is their carrying capacity in terms of sheep per acre per annum. Within the course of two or three years some very interesting and useful data should be secured and made available from these plots for the guidance of landholders in conditions similar to those prevailing in the Kybybolite district.

LIVESTOCK.

The principal livestock on the farm consists of a herd of Ayrshire cattle of about 70 head. There are 30 cows in milk, the balance being made up principally of young stock bred on the farm. The majority of the cattle are registered in the Herd Book. They are regularly tested, and records of production and feeding are kept. A system of line breeding is adopted, and within a few years it is anticipated a good, even line of stock will be the result. The sires being used at the present time have been obtained from the most productive Ayrshire cows in Australia. They are "Loyalty of Bridge View," 3980 A.H.B., and "Ida's Laird of Gowrie Park." The latter secured first award as a two-year old in the Adelaide Royal Show this year.

A small stud of English Leicester sheep is kept on the place. In addition, a nice line of Comeback ewes is being bred from English Leicester-Merino Crossbreds. Of pigs, there are 70 Mid-Yorkshires, including 12 pedigreed sows. The horse stock is made up of 35 working horses.

IRRIGATION PLOTS.

For the purpose of ascertaining the value for irrigation of the practically inexhaustible underground water supplies of the district, 12 acres have been graded and sown to lucerne (five acres), maize and sorghums (three acres), and mangels (two acres). The balance is reserved for green fodders, such as berseem and barley. These are watered from a well 40ft. deep, the water being lifted by a centrifugal pump and distributed by means of channels, some of which are made of concrete, and others of locally grown red gum.

An area of 12 acres is under orchard; 10 acres are planted to different varieties of export apples, which are being subjected to different manurial tests with the object of ascertaining the relative value of these.

LUNCHEON.

Visitors were the guests of the Farm at luncheon and afternoon tea. Prior to leaving, Representative Cameron moved a vote of thanks to the Department of Agriculture and the Farm Manager (Mr. L. J. Cook) for the opportunity that had been afforded visitors of inspecting the work being done on the farm. This was seconded by Mr. S. Shepherd (President of the Kyhybolite Branch of the Bureau), and supported by Mr. J. Marcus (Penola) and Mr. C. W. Tollner (Mount Gambier). The vote of thanks was responded to by the Director of Agriculture (Professor Arthur J. Perkins) and the Farm Manager.

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SOW SUB. CLOVER ONCE, SUPER EACH YEAR.

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FOR PARTICULARS AND PRICE APPLY—

E. A. HUNT,
Subterranean Clover Grower,
Mount Barker, South Australia.

DEPARTMENT OF AGRICULTURE.

Under the heading "Cost to the State of the Department of Agriculture and a summary of work that is being done," the Director of Agriculture (Professor Arthur J. Perkins), in the course of his annual report, says:—

Last year the question of the cost to the State of the Department of Agriculture received rather prominent attention. It seems to me that in the discussions that took place the fact was overlooked that, whereas departmental activities are mainly educational and administrative, and not essentially revenue earning, there is, nevertheless, an important revenue earned which, apart from intangible advantages, can be taken as a set-off to expenditure incurred. It appears to me, therefore, that it is upon net expenditure incurred, and not gross expenditure, that attention should be focussed. It is in this belief that I append below a statement of revenue and expenditure for 1923-24.

Table Showing Expenditure and Revenue of Department of Agriculture in 1923-24.

	Actual Ex- penditure.	Revenue.	Net Ex- penditure.
	£	£	£
Professional salaries	5,602 10 4	—	5,602 10 4
Clerical salaries	4,449 7 6	—	4,449 7 6
General contingencies	3,577 9 6	197 8 6	3,380 1 0
Printing of <i>Journal</i> , &c.	2,129 16 2	990 17 8	1,138 18 6
Inspection of fruit, hay, and ferti- lisers (including salaries)	7,130 15 4	4,837 13 0	2,293 2 4
Farmers' plots and herd testing . .	1,442 8 10	171 3 8	1,271 5 2
Government farms (five)	15,288 12 11	9,834 3 1	5,454 9 10
Government orchards (three) . . .	5,700 5 2	1,509 5 9	4,190 19 5
Government poultry station . . .	3,220 0 4	2,411 10 3	808 10 1
Fullarton orchard (on behalf of Education Department)	487 14 4	364 8 11	123 5 5
	£49,029 0 5	£20,316 10 10	£28,712 9 7

It follows, therefore, that since the actual expenditure incurred by the Department in 1923-24 was £49,029 0s. 5d., and the revenue earned and paid into public funds over the same period £20,316 10s. 10d., or 41.4 per cent. of the expenditure, the net cost to the State was £28,712 9s. 7d. For this comparatively moderate sum of money the following services have been rendered:—

1. General agricultural educational work throughout the State. embracing correspondence, lectures, and addresses in country districts, and practical demonstrations, as well as personal visits of technical officers to factories, farms, &c.

2. The maintenance and supervision of the Agricultural Bureau system throughout the State, comprising 233 country branches, and including 6,366 members.

3. The preparation and publication of a *Journal of Agriculture*, and numerous agricultural bulletins issued free of cost to members of the Agricultural Bureau, and at a nominal sum to others.

4. The supply to Government of special advice and technical reports whenever required.

5. Technical advice to other departments free of charge, such as classification of lands required for settlement, &c.

6. The establishment and control of Farmers' Experimental Plots in various parts of the State, including the testing of new crops and new methods of farming.

7. The establishment and supervision of Herd Testing Associations in dairying districts.

8. The testing of pure-bred herds of dairy cattle.

9. The control and working of five farms, three orchards, and one poultry station, run mainly on experimental lines.

10. The organisation and control of farm competitions and other tests of rural skill throughout the State.

11. The production and sale to farmers of specially selected and graded wheat, oats, barley, and rye, true to type.

12. The sale to farmers at moderate rates of breeding livestock of high quality.

13. The administration of the following Acts:—

(a) Dairy Cattle Improvement Act, 1921.

(b) Vine, Fruit, and Vegetable Protection Acts, 1885 and 1910.

(c) Sale of Fruit Acts, 1915 and 1921.

(d) Chaff and Hay Act, 1922.

(e) Insecticides Act, 1919.

(f) Fertilizers Act, 1918.

(g) Victorian Poultry Tick Act.

(h) The Federal Commerce Act.

(i) The Federal Quarantine Act.

(j) The Federal Customs Act.

14. General administrative and technical work, including attendance of officers on special Government Committees, judging at country shows, assisting with exhibitions, &c.

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Barley, Lucerne, Sudan Grass, and other Cereals.

Four, Bran, Pollard, New and Second-hand Cornsacks at Lowest Current Rates.

AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

WHEAT CROP COMPETITIONS.—PIRIE-NELSHABY DISTRICT.

[Judged by Mr. S. B. Opie, Field Officer, Department of Agriculture.]

The crops submitted for competition in this district were judged by the Field Officer of the Department of Agriculture Mr. S. B. Opie, who awarded points as follows:—

Exhibitor.	No. of Crops Entered.	Date of Seeding.	Rate of Sowing.	Amount of Manure per Acre. Super.	Variety of Wheat.	Ap- parent Yield.	True- ness to Type.	Free- dom from Dis- ease.	Free- dom from Weeds.	Even- ness of Crops.	Total Points.
Holman, J. H.	2	27-28/5/24	70lbs.	71lbs. of 36%.	Eclipse	60	10	10	15	5	100
Johns, F. A.	2	5-7/6/24	70lbs.	80lbs. of 45%.	Joffre	49	9	9	12	4	83
Clarke Bros.	1	1-2/6/24	60lbs.	45lbs. of 45%.	Golden King	48	8	9	12	3	80
Jose, F.	1	30/5/24	70lbs.	80lbs. of 46%.	Gluyas	50	7	5	11	4	77
Meyers, C.	1	25/6/24	60lbs.	60lbs. of 36%.	Walker's Wonder	42	9	9	12	4	76
Roberts, L. C. (B)...	2	22/5/24	45lbs.	65lbs. of 46%.	Currawa	43	9	9	10	3	74
Richardson, W. V. .	2	18-22/6/24	75lbs.	50lbs. of 36%.	Gluyas	46	7	7	9	3	72
Johns, H. E.	1	26-28/5/24	65lbs.	80lbs. of 46%.	Daphne	38	9	8	11	4	70
Williams, W.	2	25-30/5/24	60lbs.	60lbs. of 36%.	Florence	38	9	9	11	3	70
Noble, R. P.	2	23-27/5/4	45lbs.	55lbs. of 36%.	Late Gluyas	44	7	9	6	3	69
Roberts, L. C. (A)...	1	27/5/24	50lbs.	65lbs. of 46%.	Imported Gluyas...}	41	9	6	10	3	69
Roberts, H. W. ...	2	29/5/24	60lbs.	45lbs. of 36%.	Currawa	40	8	2	12	3	65
Haina, T. D.	3	14/6/24	60lbs.	60lbs. of 45%.	Daphne	34	8	9	8	3	62
		25/5/24	60lbs.		Currawa	37	6	6	7	4	60
		25/6/24			Florence						

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COMMENTS ON INDIVIDUAL ENTRIES.

1. *J. H. Holman*, Telowie Creek.—Carmichael's Eclipse and Joffre.—This crop (particularly the portion consisting of Carmichael's Eclipse) was, generally speaking, the best seen. It was apparently sown on well worked fallow, even, and promises a high yield. There was little weed growth. This grower's success is attributed to thorough cultivation, heavy seeding, and a fair dressing of super.
2. *F. A. Johns*, Port Pirie.—Golden King and Gluyas.—In nice order and condition. The loss of marks for "apparent yield" was due to thinning out in centre over rather a large area. This also affected the "evenness of crop." A great portion of this variety will, no doubt, yield more heavily than any of the crops entered for the competition. The variety Gluyas was good, but not equal to the Golden King.
3. *Clarke Bros.*, Port Pirie.—Walker's Wonder.—More points have been allotted this crop for "apparent yield" than any, and it is my opinion that a heavier average will be obtained from this area than from any other inspected. Unfortunately, flag smut was very bad and reduced marks. Charlock, "Nancy weed," and a head or so of barley were noticed.
4. *F. Jose*, Nelshaby.—Currawa.—This crop, though not receiving a high number of marks for apparent yield, has scored high points generally, which has placed it fourth in position. It was very free from weeds and disease, only a few stalks of barley being found and slight signs of loose smut.
5. *C. Meyers*, Wandearah West.—Gluyas.—An area of 100 acres was entered for competition, and over portions of the whole many weak patches were to be seen. Half the area was very creditable indeed, and had Mr. Meyers submitted only the better half of his field, higher marks would have been gained. Very thin patches occurred in this field, largely owing to the severe winds blowing away the cultivated soil, leaving only bare surface. This was unfortunate and is difficult to remedy. Wild oats, charlock, spinach, and a number of barley heads reduced the total.
6. Entry *B. L. C. Roberts*, Port Pirie.—Daphne and Florence.—Of the two entered, the variety Florence proved a very creditable crop; Daphne was not as good, affecting the "apparent yield" of the whole. Marks were lost on account of an area of sandhill on which the crop was very thin.
7. *W. V. Richardson*, Warnertown.—Gluyas and Florence.—As the marking shows a clean, light crop. A few heads containing "bunt" were to be seen, and weeds, such as "Nancy weeds" and barley heads, were scattered here and there.
8. *H. E. Johns*, Port Pirie.—Currawa.—This crop is rather irregular, having a number of thin patches which weakened the "apparent yield" considerably. A little barley, charlock, and star thistles were to be seen in the wheat. It has the appearance of having suffered owing to the dry spell which occurred earlier in the season. A little loose smut was noticed.
9. *W. Williams*, Warnertown.—Late Gluyas and Improved Gluyas.—Generally, this was a very fair crop, but, unfortunately, a small sandrift or knoll was included, which reduced the "apparent yield" very considerably. The wheat was also handicapped by the presence of many controllable weeds, such as Scotch thistle, barley, and three-cornered jacks. The sprinkling of many foreign wheats again was responsible for reduction of marks.
10. *E. P. Noble*, Port Pirie.—Currawa and Daphne.—In many patches this crop had not stood well, which was probably due to thin seeding and late irregular working of the fallow. "Take-all" and a few heads of "bunt" were noticed. Weeds were fairly prevalent, the worst being three-cornered jacks, a little charlock, a few wild oats, and Salvation Jane.
11. *L. C. Roberts*, Port Pirie.—Currawa.—"Bunt" seriously affected this crop, and much higher marks would have been gained but for this disease.
12. *H. W. Roberts*, Wandearah.—Florence and Gluyas.—A large part of this crop was good. Poorness of soil in the other area resulted in a crop thin and dirty with charlock, wild oats, and barley here and there.
13. *T. D. Hains*, Nelshaby.—Currawa, Daphne, and Florence.—This crop, which was submitted by Mr. Hains at the last moment, was found to contain quite a quantity of "bunt," particularly in the variety Daphne; there was also loose smut. The presence of many controllable weeds, such as Salvation Jane, a few dandelion and wire weeds, spinach, &c., reduced the total marks considerably.

CONCLUSION.

During the inspection of the competition crops in the districts of Warnertown, Nelshaby, Telowie Creek, Port Germein, and Wandearah many good crops were observed.

Tip blighting was particularly noticeable in the wheat Currawa. This variety, being recognised as mid-season and often late season, will need to be sown on the best fallow to ensure maximum returns from it in that district, which is unquestionably an early one. Varieties seen to be doing very well were—Florence, Walker's Wonder, Golden King, and Gluyas.

Considering, however, that these crops were not intended, when sown, to be entered for a competition their appearance was very gratifying.

AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

WHEAT CROP COMPETITIONS.—WESTERN DISTRICT.

[Report by the Judge (Mr. L. J. COOK, Manager Experimental Farm, Kybybolite.)]

Speaking generally, the farmers exhibiting in this competition are to be commended on their methods, for had red rust not taken such a hold some particularly high-class crops would have been on view. The stands of crops generally were really good, and in most cases indicate that great care has been taken in preparing the soil and sowing the crops. The setting of grain in the heads was mostly disappointing, as in only odd cases have more than two grains set in the spikelets.

It was pleasing to note that most of the varieties grown were comparatively true to type, evidencing care in the selection of seed for sowing. With the exception of a few small cases of "take-all," red rust was the only disease materially affecting the crops, and, unfortunately in some cases, this disease was very bad. On the whole weeds were not plentiful, but there is room for improvement in cleanliness, star thistles being rather thick in parts of the Owen district, and charcoal at the Balaklava end. The average application of phosphatic fertiliser given to the crops exhibited was approximately 115lbs. per acre. This is quite a useful application, but, personally, I hold the opinion that in a district such as this the dressing of superphosphate could be increased, in fact doubled, both with advantage to the grain yield of the crops and the feed that follows in the pastures.

Messrs. Lake Bros. are to be commended on their crop of Sultan, which showed indications of having been carefully handled. This variety of wheat, of which no fewer than nine entries were shown, has produced some splendid stands of crops, but, unfortunately, it has suffered more from the effects of rust than any of the other wheats. The winning crop was slightly affected, but at the time of judging the rust was not high up on the plants.

Five crops of Ford wheat were shown, and some of these promised to be amongst the heaviest yielders of grain. They were not nearly so badly affected by rust, and the wheat appeared to be well suited to the district.

The following table shows the points allotted to each exhibit:—

Exhibitor.	Variety of Wheat.	Ap- parent Yield.	True- ness to Type.	Free- dom from Dis- ease.	Free- dom from Weeds.	Even- ness of Crop.	Total Points.
		60	10	10	15	5	100
Messrs. Lake Bros. .	Sultan	50	9	7	12	4	82
Freebairn, Mrs. J. .	Dan	47	9	6	14	4	80
	Nabawa						
Smyth, P. McD. . . .	Major	48	9	8	10	4	79
Smith, F. J.	King's White						
	Sultan	49	8	7	11	4	79
	Zealand Blue						
Harkness Bros. . . .	Dan	45	8	8	14	4	79
	Ford						
Freebairn, Alex J. .	Ford	47	8	7	12	4	78
Smyth, P. McD. . .	Sultan	48	8	7	12	3	78
	Dan						
Freebairn, T. Y. . .	Nabawa	45	9	8	13	3	78
Smyth, P. McD. . .	Ford	47	8	7	11	4	77
Freebairn, Mrs. J. .	Sultan	45	10	5	12	5	77
McPharlin, H. C. . .	Gluyas	45	9	9	9	5	77
Lake, F. D.	Sultan	45	9	4	14	3	75
	King's White						
McKenzie, H. G. . .	Ford	43	9	6	13	4	75
	Sultan						
Shepherd Bros. . . .	Sultan	40	9	5	13	3	70
Freebairn, T. A. . .	Sultan	41	9	6	10	3	69
	Nabawa						
	Currawa						
Miller, T. H.	Gluyas	37	8	9	11	4	69
	Daphne						
Mar hman, C. W. . .	Sultan	40	9	4	12	4	69
	Ford						
	(Only part shown, some cut for hay)						

JUDGE'S COMMENTS ON INDIVIDUAL ENTRIES.

Lake Bros.—Sultan; 60 acres.—A late-sown crop that is particularly well grown, and promises, provided suitable weather follows, to yield heavily. It is a good, thick, even crop, and shows indications of filling heads better than most crops exhibited. Shows a fair amount of rust on the flag, but very little on the stems and heads. Fair number of star thistles, and few wild oats present.

Freebairn, Mrs. J.—Dan and Nabawa; 50 acres.—Good even growing heady crops. The Nabawa is filling slightly better than Dan. Fair amount of rust on flag and stems. Several small patches "take-all" noticeable, and a quantity of white heads. A particularly clean crop.

Smyth, P. McD.—Major; 50 acres.—A bulky crop that should produce a lot of grain. Heads are not particularly well filled, especially at the bottom. Little rust and loose smut. Large number of star thistles, and fair quantity of "drake" present.

Smyth, F. J.—King's White, Sultan, and Zealand Blue; 50 acres.—King's White—Good crop, fairly well headed. Sultan—Heavy crop, rather rank. Zealand Blue—Well headed. Fair amount rust, little smut, and few "take-all" patches. Fair quantity of thistles, and lot of wild oats.

Harkness Bros.—Dan and Ford; 52 acres.—Dan—Well grown and good heading crop, but weak in straw. The Ford has made a good stand, and is heading well. Little rust present, and quantity of white heads. Free from weeds.

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Will operate machines for cutting feed, sawing firewood, grinding maize, pumping water, sheep shearing, cream separating, &c. It is Australia's most popular 2 h.p. engine, because of its wonderful capacity for saving time, its remarkable simplicity, and its compactness. More than 5,000 are now in use, giving their owners faithful service year in and year out. Let us send you full particulars.

The Australasian Implement & House Furn. Co.,

NORTH TERRACE, ADELAIDE.

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Cooper

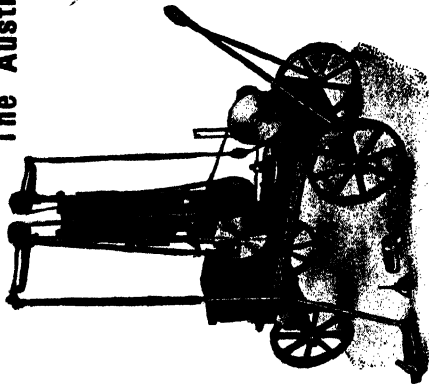
Shearing Outfits include the "Little Wonder," with 2 h.p. engine, and "Big Gun," fitted with 3 h.p.

Heavy Duty Engine, which makes it particularly useful for other farm work requiring an extra h.p.

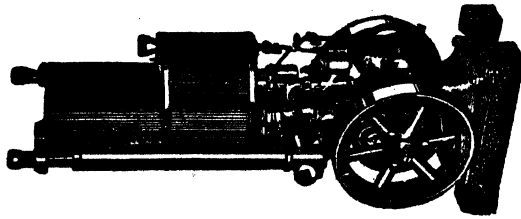
Also, BELT DRIVEN SHEARING MACHINES, COOPER HAND OPERATED SHEARING AND CRUTCHING OUTFITS, COOPER "MARVEL" COMBS AND CUTTERS.

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The Cooper "Little Wonder" 2-stand Shearing Outfit.



The Cooper "Little Wonder" Engine.

FENCING!

Cooper's Wire Strainer

No slipping, no damage to wire.



Freebairn, Alex J.—Ford; 50 acres.—A good stand of crop, with heads filling fairly well. Fair amount of rust showing. Free from weeds, but fair quantity barley present.

Smyth, P. McD.—Sultan; 30 acres. Dan; 20 acres.—Thick, bulky crops that are heading fairly well. Fair amount of rust especially on Sultan. Fair quantity thistles present. Rather patchy through water washing from foothills.

Freebairn, T. Y.—Nabawa; 50 acres.—Good medium height crop, heading fairly well. A quantity of short and thin patches present. Quantity of rust on flag. Few wild oats and undergrowth.

Smyth, P. McD.—Ford; 50 acres.—A thick, bulky crop, inclining to rankness in places. Fair amount rust, and little loose smut. Lot of star thistles present.

Freebairn, Mrs. J.—Sultan; 50 acres.—Good stand of particularly good, even crop, with plenty of heads, but these not filling well. Lot of rust, and fair quantity of wild oats, thistles, &c., present. A particularly even crop.

McPharlin, H. C.—Gluyas, 50 acres.—A good, even stand of crop that is heading better than the average, rather thin in places. Comparatively free from disease. Large quantity charlock and few thistles present.

Lake, F. D.—Sultan; 5 acres. King's White; 45 acres.—Well-developed crops, that have been badly attacked by rust. Crops have been well handled, and are particularly free from weeds.

McKensie, H. G.—Ford, 26 acres. Sultan, 30 acres.—This Ford is a fine crop, promising to be one of the heaviest yielding crops exhibited. It is of good, even height, and heading well, and rust is not high up in the plants. The Sultan shown, however, was a poor crop, badly rusted, and not well developed.

Shepherd Bros.—Sultan; 50 acres.—Plenty of head, but not well filled. Quite a number of poor patches in crop. Fair quantity of rust on flag, stem, and head. Few thistles and wild oats.

Freebairn, T. A.—Sultan; 10 acres. Currawa; 20 acres. Nabawa; 20 acres.—Good crops, but heads not well developed or filled. Fair amount of rust, a little smut, and few patches of "take-all." Thistles plentiful.

Muller, T. H.—Gluyas; 32 acres. Daphne; 20 acres.—Average crops, with heads filling fairly well. Comparatively free from disease. Charlock, wild oats, barley, &c., present.

Marshman, C. W.—Sultan and Ford.—Only part shown, most of area cut for hay, on account of ravages of red rust.

SEED WHEAT.

The following varieties of seed wheat are available for sale from the undermentioned Government Experimental Farms:—

<i>Booborowie.</i>	<i>Veitch.</i>	<i>Kybybolite.</i>
Federation	President	Caliph
Queen Fan	Baroota Wonder	Federation
Yandilla King	Gluyas Late	White Essex
King's White	Maharajah	Yandilla King
Major	Felix	Crossbred 53 Early
Acme	Caanan	Leak's Rustproof
Onas	Sultan	White Tuscan
Marshall's No. 3	King's White	
Currawa	Emperor	
Hard Federation	Caliph	
Caliph		
Dan		

The price of this wheat is 7s. 6d. per bushel on trucks nearest railway station to the respective farms. Orders should be accompanied by payment in advance.

More Years of Better Work

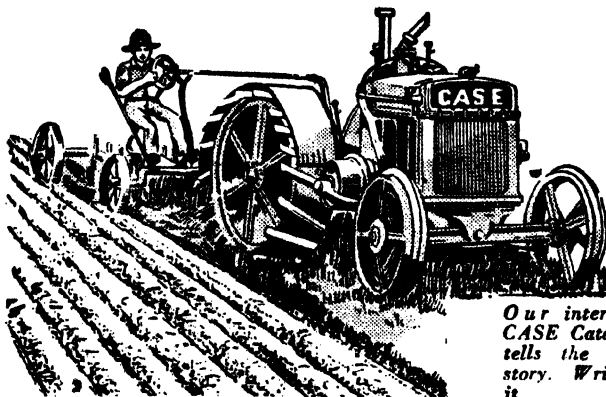
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EVERY CASE Tractor owner soon discovers that he can place absolute confidence in his machine. Years later he again discovers that his Tractor has outlasted and outworked many others. These valuable advantages are largely due to the efficiency and durability of the Case-built engine. This engine is really remarkable for its power and fuel economy. No other tractor engine has such an enviable reputation for durability.

All moving parts of the CASE are well balanced. All bearing surfaces are large. Lubrication is positive and largely automatic. All working parts are fully enclosed and protected from dust and dirt. All parts are easily accessible for adjustment, and can be readily renewed. For these and many other reasons CASE Tractors are dependable, efficient, and highly durable.



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Branches in all States

ADVISORY BOARD OF AGRICULTURE.

Minutes of meeting held at Agricultural College, Roseworthy, on Wednesday, November 12th.

Present.—Messrs. W. S. Kelly (Chairman), H. Wicks, A. B. Feuerherdt, A. M. Dawkins, C. J. Tuckwell, J. W. Sandford, Col. J. Rowell, F. Coleman, L. Cowan, W. J. Colebatch, and H. J. Finnis (Secretary).

Apologies.—Professor A. J. Perkins, Hon. W. G. Duncan, Capt. White, Messrs. P. H. Jones, W. G. Auld, Geo. Jeffrey, E. Julius, C. A. Loxton, and H. S. Taylor.

Minutes of previous meeting read and confirmed.

Forestry.—A general discussion took place on the question of Forest Control, and the previous decision of the Board that a sub-committee should wait on the Minister for the purpose of stating the case on behalf of the Board's suggestion that an Advisory Board of Forestry might be appointed was re-affirmed.

Take-all.—Mr. A. M. Dawkins drew attention to the fact that take-all was more prevalent in his district this year than had been the case, in his recollection, during any previous year. He suggested that possibly arrangements might be made for the Lecturer in Plant Pathology (Mr. Geoffrey Samuel) to visit the district.

Blowfly Pest.—Mr. F. Coleman referred to the destruction that was being wrought by blowflies amongst sheep. After a general discussion it was decided that the committee responsible for the arrangement of the 1925 Congress might endeavor to arrange a lecture by Professor Harvey Johnstone this year. It was also decided that publicity should be given in the *Journal of Agriculture* to the research work being done in neighboring States.

New Branches.—Approval was given for the formation of Branches of the Bureau at Finnis and Bunora, with the following gentlemen as foundation members:—Finnis—Messrs. H. R. Butler, E. F. Cameron, A. Carter, K. E. Smith, W. J. Mahon, J. Cameron, R. D. Story, W. A. Story, J. J. Bradford, and H. Diener. Bunora—Messrs. S. L. Wohling, H. Wohling, H. L. Van-Heythuysen, C. Franklin, sen., C. Franklin, jun., H. Rowe, A. J. Deer, W. Shammel, J. Franklin, C. Franklin, T. W. Norris, S. Clarke, S. H. Pedler, Arthur Deer.

New Members.—The following names were added to the rolls of existing Branches:—Brinkworth—E. Weckert, F. J. Wooldridge; Lipson—F. Waldrick; McLaren Flat, J. G. Crane, R. Oliver; Morphett Vale—A. Warren; Waikerie—E. Crabb; Petina—W. Keiley; Lamerook—H. L. Billing, O. S. Ball; Tarlee—H. E. Sanders; Moorook—W. Webb; Murraytown—E. Crossman, S. Dansie, P. McCarthy; Lyndoch—E. P. Filsell; Weavers—J. C. Haywood; Baramera—R. H. Davidson, J. H. Hahn, H. L. Porter, E. Hogg, J. K. Middleton, H. Linnane, G. Briers, H. Day, S. Farmer; Spalding—J. Saint, J. Campbell, G.

Lewis, P. G. Day; Tweedvale—H. Friedrichs, J. G. Hein, F. W. Jantke, J. Kumnick; Clare—A. M. Boyer; Lenswood and Forest Range—F. Lawrance, G. Adams; Collie—A. J. Munn, A. Cork; Kangarilla—F. Grimwood; Elbow Hill—T. H. Wildman, J. M. Wildman; Block "E"—E. A. Pittman, E. J. H. Coombe; Parilla—T. Boal, — Curtis; Mypolonga—R. Buckingham; MacGillivray—W. C. Burgess, J. S. Lade; Alma—T. G. Freebairn, E. Drescher, Alan Smyth; Crystal Brook—G. Wood; Renmark—A. Braund; Blyth—A. M. Kleinig.

GLENCOE HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR OCTOBER, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.		Butterfat.	
			Per Herd during October.	Per Cow during October.	Per Herd during October.	Per Cow during October.
			Lbs.	Lbs.	Lbs.	Lbs.
3/A	17	15.32	18,133.5	1,066.68	694.00	40.82
3/B	17	9	6,565	386.18	259.27	15.25
3/C	11	10.29	12,177.5	1,107.04	425.43	38.68
3/D	11.58	7.23	6,840.5	590.71	259.81	22.44
3/E	16.74	14.55	14,389	859.56	549.29	32.81
3/F	12	10.19	10,300.5	858.37	407.21	33.93
3/G	11.81	8.65	7,688.5	651.02	262.76	22.25
3/I	12.48	9.94	10,844.5	868.95	423.65	33.95
3/J	19	13.58	10,267.5	540.40	376.11	19.80
3/K	23.48	15.48	16,159	688.20	648.42	27.62
3/L	25.13	21.87	17,279.5	687.60	679.27	27.03
3/M	13.42	11.35	9,265.5	690.42	349.11	26.01
3/N	17.90	14.03	12,204	681.79	472.50	26.40
3/O	15	8.55	8,352	556.80	308.79	20.59
3/P	18.26	13.90	12,908.5	706.93	459.14	25.14
3/Q	42.10	27.13	25,962.5	616.69	1,017.86	24.18
3/R	17.71	16.81	19,304.5	1,090.04	814.74	46.00
3/T	20	20	22,924.5	1,146.23	928.09	46.40
3/U	17	10	10,323	607.24	347.02	20.41
3/V	13.06	7.10	6,883	527.03	261.09	19.99
Means	17.58	13.25	12,938.63	735.84	497.18	28.28

MILANG HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR OCTOBER 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during October.	Per Cow during October.	Per Cow May to October.	Per Herd during October.	Per Cow during October.	Per Cow May to October.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
4/A	27	25	14,399.5	533.31	3,082.04	614.12	22.75	132.6
4/B	41.61	34.68	23,939.5	575.33	2,863.54	964.37	23.18	110.28
4/C	29	25.87	13,502	465.59	2,152.82	553.24	19.08	85.14
4/D	23	22	20,770	903.04	4,911.73	801.77	34.86	185.88
4/E	20	19	8,308	415.40	2,901.19	316.01	15.80	108.66
4/F	20	17.94	9,055.5	452.78	2,511.23	387.44	19.37	107.20
4/G	27	22.35	10,356.5	383.57	2,492.96	396.35	14.68	95.71
4/H	28.32	22.10	17,911	632.45	2,820.79	682.65	24.10	116.48
4/I	27.16	25.16	14,911.5	549.02	2,453.29	671.89	24.74	106.68
4/J	53.71	40.81	35,113	653.76	2,302.05	1,308.00	24.35	83.82
4/K	16	14	7,393.5	462.09	2,500.87	327.98	20.50	103.10
4/L	31.74	27	14,104	444.36	2,262.96	684.17	21.56	104.41
4/M	22	22	11,764.5	534.75	2,602.50	446.02	20.27	100.92
4/N	43	40	29,109	676.95	3,735.17	1,165.30	27.10	145.45
4/O	43	43	31,480.5	732.11	4,242.68	1,306.73	30.39	174.45
4/P	61.97	54.29	26,705.5	451.73	1,609.97	1,011.62	17.09	60.77
4/Q	48	32.58	23,451.5	488.57	2,271.74	946.43	19.72	89.93
4/R	15	13	11,315	754.33	3,273.12	517.59	34.51	148.32
4/S	21	19.26	11,052.5	526.31	1,430.14	490.08	23.34	64.34
Means	31.50	27.37	17,612.76	559.13	2,794.81	715.36	22.71	112.19

THE BEST FRUIT

Can only be obtained from Healthy, Thrifty Trees.

TREES FROM THE

BALHANNAH DECIDUOUS NURSERIES

Are bearing heavy crops of first quality fruit in leading fruit-growing centres throughout the Commonwealth.

QUALITY IS MORE THAN A SLOGAN WITH US—IT IS THE KEYSTONE OF OUR BUSINESS.

INQUIRIES SOLICITED.

H. N. WICKS, Proprietor.

POSTAL ADDRESS—BALHANNAH, S.A.

MOUNT GAMBIER AND DISTRICT HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR OCTOBER, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during October.	Per Cow during October.	Per Cow August to October.	Per Herd during October.	Per Cow during October.	Per Cow August to October.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
2/K	26.06	13	12,681	486.61	1,450.18	523.95	20.11	59.13
2/L	24.20	19.97	14,780.5	008.50	1,581.53	641.95	26.43	69.60
2/V	22	12.45	9,344	424.73	1,039.76	359.16	16.33	42.63
2/Y	12.81	10.81	11,915.5	930.17	2,505.83	463.61	36.19	99.98
2/Dd	18.55	16.13	17,775	958.22	2,859.73	759.03	40.92	126.02
2/E	11.48	11.48	12,282	1,031.31	2,548.31	529.79	44.24	114.35
2/Ff	9.32	9.32	10,769.5	1,155.53	2,856.38	437.19	46.91	122.13
2/Gg	11.61	11.22	8,218.5	707.88	2,116.37	344.01	29.63	87.43
2/Hh	10.65	10.65	10,816.5	1,015.63	2,647.95	420.38	39.47	102.85
2/Ii	11	10.52	11,063.5	1,005.77	2,676.92	472.66	42.97	116.03
2/Jj	28	24.58	19,732.5	704.73	1,270.44	720.41	25.73	48.33
Means	16.89	13.65	12,670.77	750.27	2,019.40	515.65	30.53	84.42

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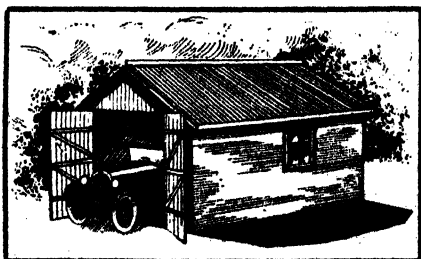
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Manager.. CHARLES GRIEVE.
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RIVER MURRAY HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR OCTOBER, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.		Butterfat.	
			Per Herd during October.	Per Cow during October.	Per Herd during October.	Per Cow during October.
			Lbs.	Lbs.	Lbs.	Lbs.
1/J	17-32	12-26	10,435-5	602-51	437-22	25-24
1/L	18	15-16	10,680	593-33	479-27	26-63
1/M	19-19	16	10,974	571-86	579-26	30-19
1/E	18	18	13,407½	744-86	576-99	32-06
1/G	24	21	22,180½	924-19	822-13	34-26
1/R	15	11-65	8,175½	545-03	404-73	26-98
1/T	14	11-48	8,242-5	588-75	439-95	31-43
1/X	18	12-65	10,209	567-17	493-55	27-42
1/Ee	15	8-61	5,964	397-60	279-98	18-67
1/Er	15-97	12-74	10,951	685-72	503-04	31-50
1/Gg	17-03	9	5,587	324-46	255-55	14-87
1/Ii	14	13	12,415-5	886-82	532-27	38-02
1/Jj	13-61	12-45	7,530	553-27	366-36	26-92
1/Mm	24	11-71	6,516	271-50	319-70	13-32
1/Nn	16-10	15-65	15,569	967-02	613-05	38-08
1/Oo	16	15	11,098	693-63	530-96	33-19
1/Pr	21	8-35	8,790	418-57	327-42	15-59
Means	17-42	13-22	10,513-24	603-35	468-32	26-88



THE MODEL GARAGE

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ESTIMATES FREE ON APPLICATION,

COWELL BROS. & Coy., Ltd., Timber and Hardware Merchants.
Victoria Square, Adelaide. — Parade, Norwood. — Port Adelaide.

IMPORTS AND EXPORTS OF FRUITS, PLANTS, ETC., OCTOBER, 1924.

IMPORTS.

Interstate.

Apples (bushels)	30
Bananas (bushels)	13,781
Passion fruit (bushels)	400
Paw paws (bushels)	1
Pineapples (bushels)	329
Cucumbers (packages)	526
Pumpkins (packages)	38
Swedes (packages)	32
Onions (bags)	471
Potatoes (bags)	19,043
Bulbs (packages)	1
Plants (packages)	6
Trees (packages)	4
Wine casks (empty)	3,448

Fumigated—2 packages trees and 41 wine casks.

Rejected—4bush. apples, 18bush. bananas, 1bush. paws paws, 4 packages cucumbers, 38 packages pumpkins, 12 bags potatoes, and 23 secondhand cases.

Overseas.

Federal Quarantine Act.

Seeds, &c. (packages)	7,769
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EXPORTS.

Federal Commerce Act.

3,543 packages citrus fruit, 100 packages other fresh fruit, 42,498 packages dried fruit, and 220 packages preserved fruit were exported to overseas markets. These were consigned as follows:—

London.

Dried fruit	37,382
Citrus fruit	1

New Zealand.

Citrus fruit	3,542
Dried fruit	4,289
Preserved fruit	220

South Africa.

Dried fruit	745
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India and East.

Dried fruit	80
Apples	100

Norway.

Dried fruit	1
-----------------------	---

France.

Dried fruit	1
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DAIRY AND FARM PRODUCE MARKETS.

A. W. Sandford & Co., Limited, reported on December 1st, 1924.

BUTTER.—Several minor fluctuations have occurred in the values of all grades of butter since we last reported, owing to the latest London advices. Overseas buyers, unfortunately, have not been operating extensively, with the result that stocks have accumulated in the local cold stores, either waiting for sales to be effected, or to be sent on consignment. Supplies during the month have kept up remarkably well, due to the cold weather and the late rains experienced in the dairying districts. At the close of the month values were as follows:—Choiceest factory and creamery fresh butter in bulk, 1s. 2½d.; first grade bulk, 1s. 1½d.; second and third grade bulk, 1½d. to 1s.; best separators and dairies, 1s. to 1s. 1½d.; fair quality, 1½d. to 1½d.; store and collectors', 10d. to 1½d.

EGGS.—Each week brought along very heavy quantities, which met with very strong demand from local and also interstate buyers, especially from Victoria, with the result that the market rates are well maintained, fresh hen realising 1s.; duck, 1s. 1d. per dozen.

CHEESE.—Heavier quantities are being handled on account of the South-Eastern factories, and stocks have been kept cleared, as local buyers have been purchasing most freely, whilst a good, steady trade has been done with Western Australian buyers. A slight easing in values was recorded owing to the lower quotations offered from the Eastern States. Values for new makes being 7½d. to 8½d. per lb. for large to loaf; semi-matured and matured 10d. to 1½d. per lb. for large and medium sizes.

HONEY.—Towards the end of the month, substantial increase was noticeable with the forwardings of the new season's take, and as the majority of the consignments were of primest liquid quality, fairly ready sales were made with interstate trade, local operators only purchasing small parcels. With the lower grades great difficulty has been experienced in effecting sales, and as previously mentioned, heavy stocks are still being held, and buyers are not being tempted to purchase at even lower figures for these grades. Prime clear extracted in liquid condition, 4d. to 4½lb.; best quality candied lots, 3½d. to 3½d.; lower grades down to 2½d.; beeswax selling fairly readily at 1s. 4d. per lb.

ALMONDS.—Growers are sending larger quantities so as to cope with the demand from the Eastern States, who are operating fairly extensively for Brandis almonds. An increase is also being felt with quantities of kernels, and as the trade are short of stocks high prices are still obtainable, Brandis realising 9d. to 9½d.; mixed softshells 8d. to 8½d.; hardshells, 4d.; kernels, 1s. 1½d. to 2s. per lb.

BACON.—With the approach of Christmas storekeepers have been paying particular attention to purchases of hams, whilst heavy trade was done in sides. However, middles and rolls have been slow, and stocks have accumulated, with the result that values for these lines have eased slightly. Local hams, 1s. 6d. to 1s. 6½d.; best factory cured sides, 1s. 3d. to 1s. 3½d.; best factory cured rolls, 1s. 2½d. to 1s. 3d.; Hutton's "Pineapple" rolls, 1s. 3d.; Hutton's "Pineapple" sides, 1s. 3d.; Hutton's "Pineapple" middles, 1s. 7d.; Hutton's "Pineapple" hams, 1s. 7d. to 1s. 8d. per lb.

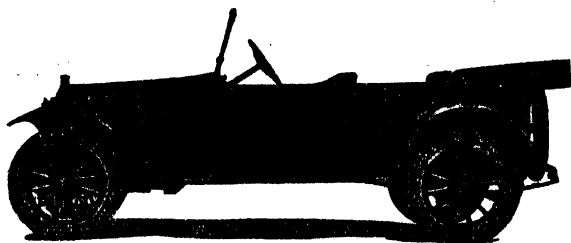
LARD.—Steady output, Hutton's "Pineapple" brand in packets, 9d.; in bulk, 8s. per lb.

LIVE POULTRY.—Increased quantities of poultry arrived at our auctions towards the end of last month, and excellent prices were secured for prime-conditioned birds. A slight easing in rates occurred with the lots of medium-conditioned hens, and lower figures were accepted to effect clearances. With the approach of Christmas buyers are keenly operating for their supplies, and we anticipate that good prices will be obtainable for the next few weeks. Already large quantities of geese are arriving, and realising high prices, which also applies to consignments of turkeys. Crates obtainable on application. The following rates ruled at our last auction:—Prime roosters, 5s. to 7s. 6d. each; nice-conditioned cockerels, 3s. to 4s. 6d.; poor-conditioned cockerels and old roosters, 1s. 9d. to 2s. 6d.; plump hens, 3s. to 4s. 6d.; medium hens, 2s. to 2s. 9d.; couple of pens lower. Geese, 7s. to 8s.; ducks, good condition, 4s. 6d. to 6s.; ducks, fair condition, 3s. to 4s.; turkeys, good to prime condition, 1s. 2d. to 1s. 6d. per lb. live weight; turkeys, fair condition, 1½d. to 1s. 1½d. per lb. live weight; fattening sorts lower. Pigeons, 8d. each.

POTATOES.—Prime new potatoes at 8s. 6d. to 10s. 6d. per cwt. on rail.

ONIONS.—Best new white onions at 14s. 6d. per cwt. on rail.

Hupmobile



LOOK AT A CAR FROM THE INSIDE

HERETOFORE it has been almost impossible to consider a car that way.

The Hupmobile now enables you to do so.

Of course, we want you to value the beauty of the Hupmobile, its ease of riding, and of control.

But most of all we want you to appreciate the engineering and construction and materials, which enable the Hupmobile to stand up so long at such phenomenally low costs.

To that end, we show in our salesroom a parts display, which reveals at a glance what really good construction is.

Come in and see it, and you will then be sure to buy your car with your eyes wide open.

If unable to call, catalogue and all particulars will be forwarded upon request.

Phoenix Motor Co., Ltd.

112-120, Pirie Street - - Adelaide.

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RAINFALL TABLE

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of and to the end of November, 1924, also the average precipitation to the end of November, and the average annual rainfall.

Station.	For Nov., 1924.	To end Nov., 1924.	Avg. To end Nov.	Avg. Annual Rainfall	Station.	For Nov., 1924.	To end Nov., 1924.	Avg. To end Nov.	Avg. Annual Rainfall
FAR NORTH AND UPPER NORTH.					LOWER NORTH—continued				
Oodnadatta	0.89	4.96	4.53	4.94	Spalding	1.37	20.61	18.95	20.27
Marree	0.87	5.04	5.31	6.07	Gulnare	2.01	21.35	18.34	18.36
Farina	0.96	6.29	5.99	6.66	Yacka	1.28	18.57	14.65	15.48
Copley	1.22	6.23	7.55	8.39	Koolunga	1.50	16.25	15.02	15.89
Beltana	0.73	4.87	8.15	8.97	Snowtown	1.55	15.57	15.36	16.07
Blinman	0.43	6.23	10.60	12.53	Brinkworth	0.98	16.46	15.40	16.30
Tarcoola	0.90	6.87	7.06	7.74	Blyth	1.49	19.57	16.14	17.03
Hookina	1.11	6.71	11.99	13.46	Clare	1.54	26.86	22.67	24.66
Hawker	1.82	8.80	11.98	12.92	Mintaro	1.20	24.27	22.68	23.57
Wilson	2.06	8.97	10.66	12.58	Watervale	2.72	28.32	24.38	27.54
Gordon	1.57	7.80	10.59	11.55	Auburn	2.88	23.09	21.54	24.35
Quorn	2.29	9.97	13.39	14.21	Hoyleton	2.27	17.10	16.92	17.91
Port Augusta	1.22	9.42	8.96	9.67	Balaklava	1.81	14.01	15.28	15.95
Port Augusta West	1.24	8.58	9.12	9.71	Port Wakefield	1.04	13.48	12.69	13.28
Bruce	1.39	7.69	9.94	10.77	Terowie	1.24	12.15	12.65	13.82
Hammond	1.51	8.78	11.13	11.91	Yarcowie	1.40	10.88	13.33	14.22
Wilmington	1.05	14.14	17.51	18.29	Hallett	1.35	18.32	15.50	16.49
Willowie	0.83	10.54	13.08	12.57	Mount Bryan	1.01	18.62	14.91	16.81
Melrose	1.58	20.09	24.53	23.40	Koorunga	1.22	18.42	17.18	18.09
Boileroo Centre	1.42	15.11	14.58	15.65	Farrell's Flat	0.73	17.73	18.13	19.00
Port Germein	1.15	13.04	12.08	12.89	WEST OF MURRAY RANGE.				
Wirrabara	1.16	18.65	18.44	19.78	Manoora	1.49	19.62	18.20	18.93
Appila	1.38	17.34	13.81	15.00	Saddleworth	1.99	19.49	19.89	19.78
Cradook	1.61	7.24	9.64	11.52	Marrabel	1.95	20.32	19.43	19.78
Carrieton	1.81	8.36	11.92	12.90	Riverton	2.31	22.92	19.97	20.79
Johnburg	1.76	8.24	10.07	10.91	Tarlee	2.14	20.22	17.28	17.93
Eurelia	1.48	8.59	12.71	13.54	Stockport	1.76	18.95	18.00	18.63
Orroroo	1.02	9.18	12.89	13.73	Hamley Bridge	2.11	18.84	15.90	16.59
Nackara	1.30	8.66	11.13	11.99	Kapunda	2.76	23.12	19.05	19.89
Black Rock	1.04	10.30	11.99	12.75	Freeling	1.87	18.31	17.27	17.99
Ucoita	0.43	6.59	11.11	12.04	Greenock	2.05	23.65	20.85	21.68
Peterborough	1.81	16.53	12.60	13.53	Truro	2.05	23.77	19.50	20.21
Yongala	2.16	18.27	13.65	14.58	Stockwell	2.50	24.12	19.50	20.32
LOWER NORTH-EAST.					Nuriootpa	1.43	18.99	20.10	21.00
Yunta	1.74	6.45	8.13	8.88	Angaston	1.87	24.60	21.64	22.53
Waukaranga	2.67	6.64	6.80	8.54	Tanunda	1.79	22.66	21.41	22.24
Mannahill	3.03	8.55	7.87	8.07	Lyndoch	1.93	26.53	22.40	22.93
Cockburn	1.89	6.08	7.52	8.31	Williamstown	2.07	27.61	27.66	27.48
Broken Hill, N.S.W.	1.86	5.76	9.14	9.98	ADELAIDE PLAINS.				
LOWER NORTH.					Mallala	2.48	19.54	16.14	16.72
Port Pirie	1.10	14.28	12.79	13.55	Roseworthy	2.27	20.13	16.74	17.35
Port Broughton	1.12	14.45	13.72	14.29	Gawler	1.94	21.85	18.36	19.11
Bute	0.98	14.68	15.19	15.78	Two Wells	1.90	19.31	15.23	18.88
Laura	1.62	20.51	17.52	18.26	Virginia	1.72	18.61	16.52	17.32
Caltowie	1.16	17.67	15.28	17.20	Smithfield	1.64	20.71	16.74	17.24
Jamestown	1.52	21.65	16.92	17.89	Salisbury	1.82	20.53	17.88	18.51
Gladstone	1.59	22.27	15.47	16.29	North Adelaide	2.09	27.53	20.83	22.37
Crystal Brook	2.86	22.32	15.11	15.95	Adelaide	1.90	23.13	20.18	21.08
Georgetown	2.84	23.76	17.67	18.55	Glenelg	1.60	21.88	17.80	18.45
Narriady	2.74	17.01	15.51	16.37	Brighton	1.69	21.83	20.65	21.37
Redhill	1.40	15.46	16.45	16.94	Mitcham	1.95	24.73	23.44	24.26
					Glen Osmond	1.78	27.33	25.15	25.94
					Magill	1.96	29.84	23.37	25.35

RAINFALL—continued.

Station.	For Nov., 1924.	To end Nov., 1924.	Average To end Nov.	Average Annual Rainfall
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MOUNT LOFTY RANGES.

Teatree Gully.....	2-26	29-92	27-04	27-77
Stirling West.....	2-78	46-40	43-74	46-82
Uraidla.....	2-36	44-31	43-05	44-23
Clarendon.....	2-59	30-16	32-84	33-09
Morphett Vale.....	1-88	23-30	22-20	22-90
Noarlunga.....	2-22	22-72	19-82	20-41
Willunga.....	2-37	27-04	25-17	25-99
Aldinga.....	1-75	20-81	19-76	20-44
Myponga.....	2-65	28-64	29-26	29-80
Normanville.....	1-57	22-26	20-09	30-70
Yankalilla.....	1-59	22-86	22-70	23-31
Mount Pleasant.....	1-88	25-67	26-55	27-28
Birdwood.....	1-73	26-56	28-57	29-39
Gumeracha.....	2-19	34-17	32-33	33-36
Millbrook Reservoir.....	2-68	34-02	33-78	36-21
Tweedvale.....	2-49	36-76	34-77	35-65
Woodside.....	1-92	33-73	30-85	32-20
Ambleside.....	1-61	34-42	33-89	34-82
Nairne.....	1-65	27-37	27-84	28-44
Mount Barker.....	2-02	31-45	28-32	31-30
Echunga.....	1-4	32-95	32-19	33-06
Maconnisfield.....	1-90	28-48	30-82	30-65
Meadows.....	2-54	35-14	35-23	36-19
Strathalbyn.....	1-75	21-25	18-53	19-37

MURRAY FLATS AND VALLEY.

Meningie.....	1-48	20-59	18-21	18-74
Milang.....	1-52	14-36	14-79	15-45
Langhorne's Creek.....	2-17	17-09	14-14	14-77
Wellington.....	1-31	16-57	13-86	14-80
Tailem Bend.....	1-27	17-64	14-14	14-68
Murray Bridge.....	1-06	15-50	13-23	13-94
Callington.....	1-87	16-6	14-80	15-49
Mannum.....	1-27	12-32	10-38	11-66
Palmer.....	0-92	13-20	14-80	15-46
Sedan.....	1-11	13-46	11-74	12-27
Swan Reach.....	1-52	11-70	10-36	11-06
Blanchetown.....	0-51	7-51	9-41	10-09
Eudunda.....	1-23	14-99	16-13	17-51
Sutherland.....	0-79	9-65	10-69	11-20
Morgan.....	0-87	9-52	8-52	9-30
Waikerie.....	1-22	11-20	9-26	9-87
Overland Corner.....	0-98	7-63	10-19	11-03
Loxton.....	1-38	12-18	11-68	12-50
Renmark.....	1-02	8-91	10-23	11-06

WEST OF SPENCER'S GULF.

Eucla.....	0-08	6-40	9-46	10-01
White Well.....	0-33	6-18	8-47	9-20
Fowler's Bay.....	0-58	7-85	11-83	12-14
Penong.....	0-38	12-33	12-14	12-53
Ceduna.....	0-73	8-87	8-78	10-25
Smoky Bay.....	0-57	9-16	11-59	10-98
Petina.....	0-46	12-33	12-50	12-95
Streaky Bay.....	0-23	12-54	14-27	15-11
Talia.....	0-34	13-57	14-69	15-32
Port Elliston.....	0-31	14-94	16-03	16-56
Port Lincoln.....	0-76	14-51	17-89	19-69
Cummins.....	0-83	14-86	19-33	18-56

WEST OF SPENCER'S GULF—continued.

Tumby.....	1-83	14-80	13-78	14-56
Carrow.....	0-53	10-97	13-75	14-42
Arno Bay.....	0-54	11-02	12-44	13-06
Cowell.....	0-57	9-23	11-05	11-63
Minnipa.....	0-40	11-73	14-57	15-51
Ungarra.....	0-73	14-55	—	—
Darke's Peak.....	1-41	14-52	—	—
Kimba.....	1-01	13-11	—	—

YORKE PENINSULA.

Walleroo.....	0-92	14-16	13-62	14-15
Kadina.....	0-81	15-26	15-41	16-02
Moonta.....	1-05	15-34	14-75	15-35
Green's Plains.....	1-11	14-69	15-35	15-86
Maitland.....	1-54	20-83	20-57	20-17
Ardrossan.....	1-26	13-45	13-69	14-18
Port Victoria.....	1-78	16-88	15-00	15-50
Curramulka.....	1-41	16-84	17-66	18-20
Minlaton.....	1-63	18-94	17-45	17-90
Brentwood.....	1-51	17-02	15-41	15-83
Stansbury.....	1-34	17-94	16-58	17-01
Warooka.....	2-62	17-46	17-42	17-80
Yorketown.....	1-57	15-74	16-81	17-24
Edithburgh.....	2-26	15-67	17-20	16-58

SOUTH AND SOUTH-EAST.

Cape Borda.....	1-14	21-81	24-43	25-08
Kingscote.....	1-49	16-61	18-38	19-04
Penneshaw.....	0-87	15-97	18-65	19-47
Victor Harbor.....	2-03	18-82	20-69	21-49
Port Elliot.....	2-01	19-27	19-37	20-12
Goolwa.....	1-70	16-71	17-13	17-89
Meribah.....	1-75	12-74	—	—
Alawoona.....	1-50	12-11	—	—
Mindarie.....	2-07	—	—	—
Sandalwood.....	2-02	14-54	—	—
Karoonda.....	1-66	16-38	—	—
Pinnaroo.....	2-68	16-78	15-83	15-50
Parilla.....	0-95	14-13	14-02	14-51
Lameroo.....	1-85	20-21	15-57	16-32
Parrakie.....	1-38	15-09	14-00	14-58
Geranium.....	1-86	18-19	15-91	16-62
Peake.....	1-34	19-27	15-99	16-73
Cooke's Plains.....	1-79	20-05	14-54	15-14
Coomandook.....	1-62	21-39	17-77	17-49
Coonalpyn.....	1-73	22-28	16-50	17-40
Tintinara.....	1-92	19-03	17-83	18-70
Keith.....	2-15	18-06	17-44	18-22
Bordertown.....	2-79	19-63	18-40	19-39
Wolseley.....	3-15	20-79	17-38	18-12
Frances.....	2-16	22-83	18-75	19-73
Naracoorte.....	1-76	22-49	21-50	22-25
Penola.....	2-13	22-93	24-99	26-26
Lucindale.....	1-89	24-00	22-96	23-00
Kingston.....	1-83	25-03	23-39	24-51
Robe.....	1-10	20-51	23-73	24-69
Beachport.....	1-15	20-69	26-08	27-20
Millicent.....	3-23	30-20	28-28	29-39
Kalangadoo.....	2-38	29-93	31-89	32-47
Mount Gambier.....	2-22	24-44	29-48	31-29

AGRICULTURAL BUREAU REPORTS.

INDEX TO CURRENT ISSUE AND DATES OF MEETINGS.

Branch.	Report on Page	Dates of Meetings		Branch.	Report on Page	Dates of Meetings	
		Dec.	Jan.			Dec.	Jan.
Alawoona	•	—	—	Gawler River	•	8	—
Aldinga	•	10	—	Georgetown	•	6	10
Allandale East	488	12	9	Geranium	•	—	31
Alma	454	—	R	Gladstone	450	5	9
Amyton	•	8	12	Glenosce	•	11	8
Angaston	•	—	—	Glossop	•	10	7
Appila-Yarrowie	•	—	—	Goode	•	10	—
Arthurton	470	—	—	Green Patch	472	8	5
Ashbourne	•	—	—	Gulnare	451	R	R
Balaklava	459	13	10	Gumeracha	•	8	12
Balhannah	•	—	—	Halidon	•	12	—
Barmora	480	8	5	Hartley	•	—	—
Beetaloo Valley	•	—	—	Hawker	•	9	—
Belalie North	•	6	10	Hilltown	•	—	—
Berri	480	10	7	Hookina	450	11	8
Bethel	A. M.	—	—	Inman Valley	•	—	—
Big Swamp	•	—	—	Ironbank	484	5	9
Blackheath	•	5	9	Kadina	470	—	R
Black Springs	466	9	—	Kalangadoo (Women's)	484	13	10
Blackwood	•	15	19	Kalangadoo	•	13	10
Block E	•	—	—	Kangarilla	484	12	—
Blyth	454	6	—	Kanmantoo	•	6	—
Boolaroo Centre	454	5	9	Karoonda	•	10	7
Borrika	•	—	—	Keith	•	—	—
Brentwood	•	11	8	Ki Ki	•	—	—
Brinkley	480	R	R	Kilkerran	468	11	8
Brinkworth	451	R	R	Kimba	•	—	—
Bundaleer Springs	•	—	—	Kingston-on-Murray	•	—	—
Bute	•	R	—	Kongorong	486	15	5
Butler	•	—	—	Koonibba	•	11	—
Calca	•	—	—	Koppio	•	8	—
Cadell	•	—	—	Kringin	480	6	R
Canowie Belt	•	—	—	Kybybolite	•	11	R
Carrow	•	10	—	Lake Wangary	•	6	10
Charra	•	10	—	Lameroo	480	R	10
Cherry Gardens	•	9	—	Laura	•	13	10
Clanfield	•	—	—	Lenswood and Forest Range	•	—	—
Clare	465	5	—	Light's Pass	•	11	8
Clarendon	•	—	—	Lipson	472	6	—
Claypan Bore	•	R	R	Lone Gum and Monash	•	10	7
Cleve	•	10	—	Lone Pine	•	—	—
Cobdogla	•	—	—	Longwood	•	6	—
Collie	472	—	—	Loxton	•	—	—
Colton	•	6	R	Lucindale	484	—	—
Coomandook	•	10	7	Lyndoch	467	11	—
Coonalpya	•	12	9	McLachlan	472	—	—
Cradock	•	—	—	McLaren Flat	482	11	—
Crystal Brook	•	6	10	MacGillivray	481, 484	9	6
Cungah	•	—	—	Maitland	•	—	8
Currency Creek	481	12	9	Mallala	•	R	R
Cygnet River	480	11	8	Mallee	•	5	9
Darke's Peak	•	—	—	Mangalo	•	—	—
Daniel Bay	•	—	—	Mannanarie	•	R	R
Edillilie	•	6	10	Marama	•	—	—
Elbow Hill	•	16	13	Meadows	•	10	—
Eureka	•	R	R	Milang	•	13	10
Farrell's Flat	•	5	—	Millioent	•	5	—
Frances	•	—	34				

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Branch	Report on Page	Dates of Meetings		Branch	Report on Page	Dates of Meetings	
		Dec.	Jan.			Dec.	Jan.
Miltalie	*	6	10	Rockwood	484	8	5
Mindarie	*	—	—	Rosedale	487	—	—
Minlaton	*	—	—	Rosy Pine	*	—	—
Minnipa	*	—	—	Rudall	*	r	r
Monarto South	472	6	—	Saddleworth	*	—	—
Moonta	†	r	r	Saddleworth (Women's)	466	12	9
Moorak	*	—	9	Salisbury	467	2	—
Moorook	473-4	12	9	Salt Creek	*	—	—
Morohard	445, 450	r	r	Sandalwood	*	11	—
Morphett Vale	483	11	8	Shoal Bay	484	10	—
Mount Barker	*	10	7	Smoky Bay	*	—	—
Mount Bryan	†	—	r	Spalding	454	19	16
Mount Bryan East ..	†	—	—	Stirling	450	6	10
Mount Gambier	†	13	10	Stockport	†	—	—
Mount Hope	470	6	10	Streaky Bay	472	13	10
Mount Pleasant	†	—	—	Strathalbyn	484	9	6
Mount Remarkable ..	*	—	—	Talia	*	13	10
Mount Schank	*	9	13	Tantacoola	487	6	3
Mundalla	*	10	7	Taplan	480	8	—
Murray Bridge	*	—	—	Tarcowie	452	r	r
Murraytown	451	—	—	Tarlee	467	r	r
Mypolonga	480	8	r	Tatiara	487	12	r
Myrta	*	6	—	Tweedvale	484	11	8
Nantawarra	462, 467	11	8	Two Wells	*	—	—
Naracoorte	*	13	10	Uraidla & Summertown ..	*	1	5
Narridy	*	13	10	Veitch	*	—	—
Narrung	*	13	10	Virginia	*	r	r
Neeta	*	—	—	Waikerie	478	13	10
Nelshaby	452	6	10	Wall	*	—	—
Netherton	475, 480	10	7	Wanbi	*	—	—
New Residence	*	10	7	Warcovie	448	r	r
North Booborowie ..	*	r	r	Watervale	*	—	—
North Bundaleer	*	—	—	Weavers	168	8	—
Nunkeri and Yurgo ..	*	10	—	Wepowie	448	r	r
O'Loughlin	*	10	—	Whyte-Yarcovie	*	8	12
Orroroo	†	—	—	Williamstown	467	3	r
Owen	*	5	9	(Women's)	*	—	—
Parilla	†	r	r	Williamstown	467	12	9
Parilla Well	*	8	12	Willowie	*	10	7
Paruna	*	—	—	Wilkawatt (Women's) ..	480	—	—
Paskeville	†	5	9	Wilmington	*	10	—
Pata	†	—	—	Windsor	*	r	6
Penola	487	6	—	Winkie	*	—	—
Penneshaw	*	8	12	Wirrabara	453	—	—
Petina	†	—	24	Wirrega	488	—	—
Pinnaroo	*	12	9	Wirrilla	*	—	10
Pinnaroo (Women's) ..	476, 480	5	—	Wirrulla	470	—	—
Pompoota	*	10	14	Wookata	*	—	—
Poochera	476	6	r	Wudinna	*	—	—
Port Broughton	*	—	9	Wynarka	479	—	—
Port Elliot	*	20	16	Yacka	*	9	—
Port Germein	*	—	—	Yadnarie	*	9	—
Pygery	*	6	10	Yallunda Flat	471	—	—
Ramco	*	8	—	Yaninee	*	—	—
Rapid Bay	†	6	—	Yeelanna	*	6	10
Redhill	454	—	—	Yongala Vale	*	—	—
Rendelsham	*	10	5	Yorketown	*	—	—
Renmark	†	11	8	Younghusband	†	r	r
Riverton	*	—	—				
Riverton (Women's) ..	*	—	—				
Roberts and Verran ..	476	11	8				

* No report received during the month of November.
A.M. Annual Meeting.

+ Formal.
a. In recess.

† Held over until next month.

REPORTS OF BUREAU MEETINGS.

UPPER-NORTH DISTRICT.

(PETERBOROUGH AND NORTHWARD.)

MOBCHARD (Average rainfall, 13.50in.).

November 8th.—Present: 17 members and five visitors.

MOUSE-PROOFING STACKS.—Mr. E. Kitto, who read a paper dealing with this subject, said the protection of hay and wheat stacks from mice was a very important matter, and should receive the serious attention of farmers and agents. During 1917 he erected two hay stacks, and when the mice put in an appearance galvanized iron was placed around one stack. That preserved that stack so well that it lasted right throughout the year and a good part of the next, for feed for stock. The other stack that was not protected was riddled by mice and soon collapsed, and with the rain on it, became a rotten heap and had to be carted out of the yard as rubbish. The method Mr. Kitto adopted was as follows:—"First dig out a trench about 4in. or 5in. deep around the stack, close to the hay, then erect posts high enough to take the iron which must be put in the trench. Then nail or screw the iron to the post, fill up the trench, and pack the earth in tightly. Care must be taken to fit all the iron well together, especially at the corners. This is not an expensive job, and the little time it takes to do it is time well spent. If a farmer wished to make a good permanent base for a hay stack near the chaffcutter, the best plan would be to dig out a trench as before, then fill it with concrete. Then concrete could be built on between boards for about 1ft. above the ground. All the middle space should be filled with stones and gravel up to within about 4in. of the top, the remaining 4in. being filled with concrete the same as for a floor. Posts should also be put in and iron attached. The stack could be built on that base, and if well roofed, and the stack built so that the water would drop from the eaves outside the iron, the stack would be well protected, both from mice and weather. The concrete base would also prevent any waste from damp at the bottom of the stack." Messrs. Scriven, Tilbrook, Kupke, Lillecrapp, and Longbottom took part in the interesting discussion which followed the reading of the paper.

WARCOWIE (Average annual rainfall, 12.16in.).

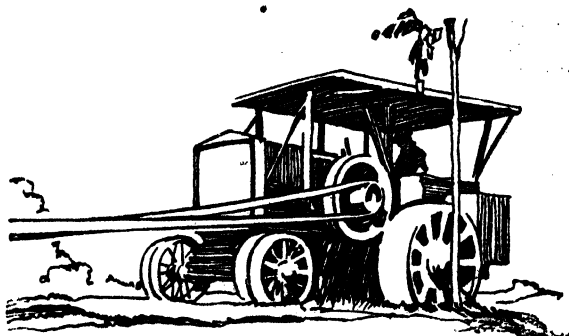
October 7th.—Present: Five members.

HAYMAKING.—Mr. A. Crossman, who read a short paper dealing with this subject, said a level and cleared piece of land should be selected for the hay crop, and on it a variety of wheat suitable for hay should be sown. Yandilla King, Lots, and German Wonder were good hay wheats. Federation was not a good hay wheat, because too much grain was lost in carting and stacking. In building the stack the centre and the eaves should be well raised, and after completion it was advisable to cover the stack with straw as a protection from the weather. The report of the delegates to the Annual Congress was received and discussed.

WEPOWIE (Average annual rainfall, 13in. to 14in.).

October 6th.—Present: eight members.

CARE OF HORSES.—Mr. A. Matthews read a short paper dealing with this subject. The discussion which followed centred chiefly around the points as to the best feeding rations for the team. Mr. C. Knauerhase was of the opinion that a small quantity of corn should be added to the chaff. Mr. W. Gregurke preferred oats and bran to other grain. Mr. F. Churcher said old oats were better feeding value than new oats. The Hon. Secretary (Mr. W. Smith) did not think it advisable to give horses as much as they could eat. He suggested that the horses should be fed in such a manner that they would always have an appetite, and thus do better. Mr. T. F. Orrock considered the addition of corn saved a considerable portion of the bulk of the feed.



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HOOKINA, October 9th.—Mr. M. Henschke read a paper from the *Journal of Agriculture*, "Breeding Light Horses", and an interesting discussion followed.

MORCHARD, October 11th.—The report of the delegates to the Annual Congress was received and discussed. The meeting then debated the subject, "Tractor *versus* Horses," the majority of members expressing a preference for horse-power.

STIRLING, October 11th.—The Hon. Secretary (Mr. D. D. Smith) read a paper, "The Agricultural Bureau and Its Benefits," and an instructive discussion followed.

MIDDLE-NORTH DISTRICT.

(PETERBOROUGH TO FARRELL'S FLAT.)

GLADSTONE (Average annual rainfall, 16in.).

October 10th.—Present: 20 members.

POWER FARMING.—The Hon. Secretary (Mr. J. T. Bergin), read a paper, and in the discussion that followed Mr. A. Blessing commented on the excellent manner in which the paper had been prepared. He, however, remained entirely unconvinced of the superiority of the tractor over horseflesh, and he challenged the statement that a tractor would work where horses would not go. He had had an opportunity of witnessing a tractor in operation, and he did not consider the result as first class work. It was absurd to state that it cost £20 to bring a horse to maturity, when bred on the farm. His estimate of the cost was £7. The figures, so far as the tractor was concerned, were very attractive. He could, however, challenge the writer on the question of the cost of feeding the horses. Hay, after it left the stook, was money earned, and that fact should be against the tractor. Mr. J. S. Fisher said the price quoted for hay was very excessive. It was far beyond the merchant's price, and they all knew that farmers could cut their hay very much cheaper than could the merchants, and, in addition, they had no bags to buy. Mr. J. Gale preferred the tractor for working the land, and so far as working costs were concerned, the tractor was considerably cheaper than horses. The only time when horses could be worked at an advantage over the tractor was when the land was very wet, but by waiting until drier conditions prevailed, the tractor soon made up for lost time. As for feeding costs, he estimated that on his father's farm, taking the whole year through, the use of the tractor had enabled them to effect a saving of £100. Mr. C. A. Lines said his brother had a tractor which reaped and ploughed as much as could be done with two teams of horses, and it worked well in wet weather. As for fuel, it averaged 1 gall. to the acre. It cost about 9d. per acre to run the tractor while the horse team cost about 1s. 4d. Mr. A. Blessing asked how the tractor would overcome the difficulty of working rough ground. Horses would travel gently over rough ground, but the tractor went at the same pace, consequently, there would be breakages. He mentioned that it took two men to work the tractor thoroughly, therefore, it was questionable whether there would be any saving in cost of labor. Mr. C. Bennett defended the tractor against Mr. Blessing's assertion that the machine could not be driven over rough ground so satisfactorily as could a horse team. All that was required was familiarity with the mechanism, and the tractor could be driven through any class of country with ease. Mr. R. Coe agreed with Mr. Blessing. Mr. J. Gale said that his experience was that one would go over rough ground just as well with the tractor as with horses. With regard to labor, he considered it was an advantage to have two men with the tractor rather than one only, because one could be engaged in the operation of oiling, &c., while the other was engaged in other manipulations, thus saving much valuable time. Mr. G. Black contended that he could erect a stable at a considerably less sum than was claimed by the writer of the paper.

GULNARE.

October 15th.—Present: 17 members and three visitors.

BLACK RUST.—In the course of a discussion on this subject members considered that the time of sowing affected the crop, inasmuch as wheat sown early, especially Major, was more subject to attack than when sown late and practically “bogged” in. Mr. D. Hodge considered that it was absolutely necessary to study the seeding conditions and sow as late as possible. Mr. G. Hill said that after several years’ experience he had found Federation the best wheat to sow in rotation after oats.



Portion of a 15-acre Paddock of Wimmera Rye Grass, on the Property of Mr. H. D. Shields, Melrose. A cut of 1½ tons of Rye Grass Hay to the Acre was Taken from this Crop.

MURRAYTOWN.

October 4th.—Present: 13 members and two visitors.

CULTIVATION OF SOIL.—In the course of a paper dealing with this subject Mr. J. Cabiac said that with the present high price of implements and farm requisites and the low prices that had been received for farm produce for the past few years, farmers realised that the producing capacity of the holding had to be increased tivation of the soil could be laid down on account of the varying nature of the soil. Therefore, it was essential that every farmer should study and experiment in order to ascertain the best method of working the land on his holding. To secure maximum results, he thought it would be necessary to adopt, more or less, to make ends meet, and he considered that careful cultivation of the soil was the principal method of attaining that end. No hard and fast rule for the cultivation of a system of dry farming. The average land in that district should be ploughed from 4in. to 5in. deep immediately after seeding operations were completed. The land when being fallowed should not be too wet nor too dry. A set of heavy harrows should then be used, and if the surface were fine and loose it should be left for a time until weeds appeared, when the land could be cultivated. Where the land was suitable and there were not too many strong weeds, and not too rough, a spring tyne cultivator was an ideal implement because it had a tendency to shake the

soil and leave it in ridges. Where the land was rough any tyne cultivator except the V type could be used. With deep rooted weeds such as star thistle and Scotch thistle the disc cultivator was the best implement. Finally, the soil should be worked with the harrows after every fall of rain. An interesting discussion followed.

NELSHABY.

September 26th.—Present: 14 members.

POULTRY.—In the course of a paper dealing with this subject, Mr. A. Beyer said that after having decided on a breed of fowls, the next point to be decided was the erection of the houses and yards. When building the houses, the less timber that was used the better, because wood provided a harbor for vermin. To erect the perches, four stakes 2ft. 6in. high should be driven into the ground away from the walls. Old reaper drums filled with sand and hung inside the house made very good nests. Boxes and straw should not be used, because vermin bred in them. One of the most important features in poultry keeping was to keep tick and lice under control. Once a month the perches should be taken out and a fork full of straw placed in the houses. The straw should be fired and lime spread over the floor and insectibane in the nests. Soapsuds and kerosene were also very effective disinfectants. *Diseases*.—Cholera was, as a rule, most prevalent during summer, and was usually caused by heat or through the birds drinking warm water. To guard against the disease, the birds should have a good supply of cool drinking water. Earthenware vessels were recommended because they kept the water cool. A good plan to maintain a good supply of water was to put a kerosene tin full of water upside down in the vessel, with a small hole in the side at high water mark, and allow the water to run into the vessel as the birds drank it. Chicken pox was a very infectious disease, but could be easily dealt with by separating the affected birds from the others and placing carbolic acid and lard on the heads of the fowls. Roup was most difficult to cure. He suggested that all birds that contracted that disease should be killed. The Leghorn was the best laying fowl, but Black Orpington was also a good breed. If Leghorns were kept, it would be necessary to keep a few hens of a heavy breed or an incubator to raise chickens. In keeping a few hens for kitchen use only, he preferred Minorcas because they laid the largest egg. Each year sufficient pullets should be reared to take the place of the hens that had passed their second laying season. Chickens under three weeks old should be fed with seed or crushed wheat, and by that time they should be able to run out and take care of themselves. Before taking chickens from the brooder, it was advisable to separate the cockerels and market them.

TARCOWIE (Average annual rainfall, about 15½in.).

September 9th.—Present: Nine members.

BENEFITS OF THE AGRICULTURAL BUREAU.—Mr. J. McCarthy read the following paper:—"Since the inception of the Agricultural Bureau wonderful achievements have been attained in farming pursuits. From the outset the objects of the Bureau have been the education of the producers, and it cannot be too often impressed upon the young men as they venture forth in farming pursuits that a full store of scientific principles combined with practical experience is essential to progress. If farming in Australia is to be a prosperous avocation it must attract to it young men who are equipped with a sound agricultural education. There is no calling in life in which the need for preparatory training is held in so low estimation. It is frequently stated that we are living in the age of the specialist, and yet the business of rural production, which will tax the ingenuities of the most versatile individual, is freely engaged upon by men who are wholly untutored. At colleges, where provision is made for scientific farming, practical experience and education can be obtained. For those who cannot avail themselves of the opportunities above mentioned a good education can be obtained by becoming an active member of the Agricultural

Bureau. I would lay special stress on the word "active," because there are too many members who are quite satisfied with having their names on the roll, and only attend sufficient meetings to maintain same. A member should accept the responsibility of attending as many meetings as possible of the local Branch, and during the work on the farm he should be observant and bring under notice of the members of the Branch any uncommon occurrence. This will lead to profitable discussion. This State is largely dependent upon agriculture, and the farmer who considers that he has learned the last word regarding agriculture should attend the local Branch meetings and impart some of his knowledge to his less fortunate neighbours. The *Journal of Agriculture*, circulated monthly by the Department, is a welcome gift to every member. From its pages can be obtained the results of experiments at the various experimental farms, and the advice of experts on agriculture, horticulture, veterinary, and all rural topics is always available to the producer. There are 235 Branches of the Bureau at present, and Annual Conferences are held in Adelaide and at various country centres, and each Branch is given the opportunity of selecting delegates to attend the General Congress. To maintain interest in the meetings of the Bureau and for the advancement of agriculture, it is necessary for members to be punctual and regular in attendance, observant in their everyday work, and eager to impart to their fellow members the valuable information they may be fortunate enough to possess."

WIRABARA (Average annual rainfall, 18.91in.).

November 1st,—Present: 16 members and visitors.

PROTECTION OF NATIVE BIRDS.—In the course of a paper dealing with this subject Mr. P. J. Curnow said that the native insectivorous birds played an important part in assisting to keep under control the many insect pests which

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damaged the crops of the farmer and gardener. All such birds should be strictly protected by all landholders. Quail, magpies, laughing jacks, Murray magpies, and larks were most useful birds to the man on the land. Honey-eating birds assisted in the fertilisation of plants and trees. Some of these birds were an enemy to the gardeners when fruit was ripe, but if the gardener took into consideration the amount of work the birds did in the garden at other times of the year he would find that their usefulness outweighed their destructiveness. Scavenger birds, and particularly the crow, were as a rule regarded as an enemy of man. The crow at times did some harm, but it also assisted the farmer in cleaning up carcasses and eating blowfly larvæ. The wedge-tailed eagle, the largest eagle in the world, also served a useful purpose in rabbit-infested country. He had seen as many as 12 freshly killed rabbits in one nest at nesting time, and dozens on the ground around the nest. The rabbits were all full grown, and had been killed during the breeding season of the rabbits. Night-flying birds were most useful because they assisted in keeping under control those pests that came out at night, such as rats, mice and grubs. Farmers and gardeners should encourage birds about their gardens and farms, and take note of the good work they performed. During fallowing of the present year mice were plentiful, and when turned up by the plough they were nearly always caught by either magpies or laughing jacks. He had also noticed blue cranes catching mice. In concluding, Mr. Curnow asked all members to think before destroying any of the native birds, and weigh their good against their depredations.

APPRECIATION OF SERVICES.—Mr. P. J. Curnow, on behalf of the members of the Bureau, presented Mr. E. J. Stevens with a small token of esteem for the valuable work that he had performed during the nine years he had been Secretary of the Wirrabara Branch.

BLYTH, October 27th.—Capt. S. A. White, C.M.B.O.U. (Vice-Chairman of the Advisory Board of Agriculture) delivered an address illustrated with lantern views, "Birds of Australia," to a full attendance of members and a large number of visitors.

BOOLEROO CENTRE, October 14th.—Fifteen members and a number of visitors, accompanied by the Director of Agriculture (Prof. Arthur J. Perkins), took part in the annual tour of the district.

BRINKWORTH, October 18th.—Mr. H. Snow read a paper, "Cultivation of the Soil," and an interesting discussion followed, in which Messrs H. E., C. A., and C. C. Ottens, B. Walldhunter, and J. Pedlar took part.

REDHILL, October 14th.—Fourteen members attended the October meeting, when a paper, "Power Farming," was read and discussed. The report of the delegates to the Annual Congress was also received.

SPALDING, October 17th.—A full report of the proceedings of the Annual Congress was given by the delegates, Messrs B. Hacklin and S. Trengove.

LOWER-NORTH DISTRICT.

ADELAIDE TO FARRELL'S FLAT.)

ALMA.

October 30th.—Present: 19 members.

SOIL TILLAGE.—The following paper was read by Mr. A. Smyth:—"Present-day farming requires the most careful and exacting methods of soil cultivation. In any community where agricultural pursuits are followed the prosperity of its members is very closely allied to the methods of soil cultivation. Great strides have been made in recent years in this particular aspect of practical

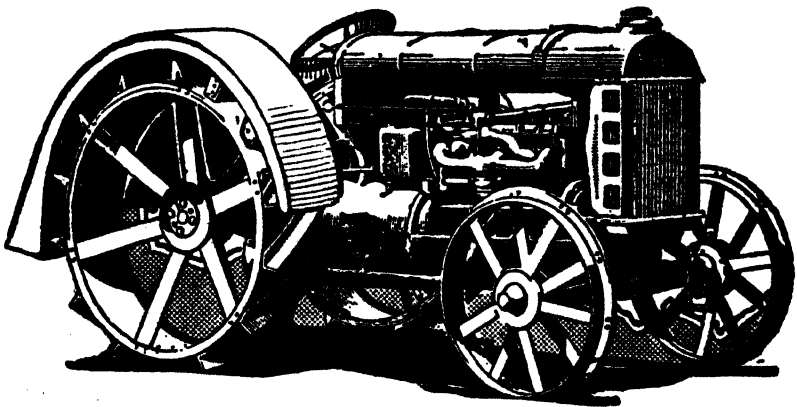
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farming. Science has placed before the man on the land much valuable and necessary information concerning the chemical nature of soils and the requirements of growing cereals, with the result that old-time methods have given way before the more recent policies which experience and scientific research have taught the progressive farmer. Soil cultivation has been rendered more necessary, because the various cereals grown in our day have been bred and improved by careful attention of experts, have become more or less domesticated, and consequently they are not able to thrive and reproduce their kind if left to battle for themselves among the various weeds, and finally, after a year or two, die out. Especially is this so in the case of wheat, and in the growing of wheat farmers have to give their whole attention to the tillage of the areas on which wheat is to be grown. The chief aims of soil cultivation are:—Preservation of moisture, storage of plant foods, creation of seedbed, aeration of the soil. One of the most important aspects of fallowing is the preservation of moisture. When rain falls on ordinary caked soil it is absorbed by the soil particles, each particle holding its own particle of water. Gravitation causes the water to sink to a certain level—dependent upon the degree of saturation of the soil particles—at which level the water hangs in suspension, the gravitational pull being neutralised by the capillary attraction of the soil particles. Meanwhile, evaporation takes place from the surface, and as each surface particle gives up its moisture, it draws on the reserve from the lower particles. This continues until the soil has given off all of its moisture to the atmosphere, and the ground cracks, and any vegetation suffers from lack of moisture. It is this result that the tillage of the soil prevents. An ideal fallow should have a layer of fine loose soil lying upon the seedbed. This loose mulch of soil acts as a break to the capillary action of the rising moisture during evaporation, and rain, when it falls, is conserved in the compact soil in which the wheat plant develops its root system. When heavy rain falls, the loose surface mulch becomes caked to an extent varying with the nature of the soil. Therefore, it is necessary, in order to store as much moisture as possible, to break the crust so formed with suitable implements. The wheat plant during its growing period needs an enormous amount of water, for not only have its own requirements to be met, but a reserve has to be stored to compensate the moisture lost from the foliage of the plant through transpiration during warm, dry weather, and especially during such hot north winds as are prevalent in October. The lower the rainfall the more necessary is the conservation of moisture, and this is only obtained by preparing well-tilled fallow. Since caked and unbroken areas lose their moisture rapidly, the benefits of early fallowing are apparent in this aspect of soil tillage. Then there is the storage of plant food to be considered in the preparation of land previous to cropping. An average crop of wheat exhausts the land of many of its vital foods, and before another payable crop can be expected those foods must be returned to the soil, and cultivation is a means to that end. Virgin soil is generally rich in plant foods, such as nitrogen, phosphoric acid, and vegetable humus. Experiments have been made to determine the quantity of nitrogenous matter in good fallow and in untilled soil. The results have shown conclusively that fallowed land contains a far greater quantity of nitrogen than does grass land. The longer land can lie as bare fallow the more opportunity there is for the accumulation of plant foods, and cultivation will increase the process. All soils owe their recuperative powers largely to the activities of certain bacteria found in them. These bacteria liberate many substances which exist in the soil in an unavailable form into forms which are soluble, and therefore available to plant life. Their chief effect is the liberation and storage of nitrogen, an essential element in all vegetable, and for that matter animal, growth. Tillage has a beneficial action upon these bacteria—stimulating their activities, and, further, the soil is broken and exposes more surface to the bacteria. These organisms are supposed to have a controlling effect upon 'take-all' fungus moreover, and since summer working of fallows when dry tends to interfere with the energy of bacteria there may be some grounds for the supposition that the destruction of soil bacteria by dry tillage is a direct cause of the prevalence of 'take-all' in the following crop. In the preparation of fallow, and during cultivation, it should be the aim of the farmer to create a firm seedbed, without which many of benefits of conserved moisture are lost. An ideal seedbed is one having a shallow layer of soil of fine tilth to a depth of 1½ in. to 2 in. overlying a firm well-packed bottom. A seedbed is essential if a crop is to withstand a pro-

longed dry spell. It is remarkable what dryness a crop can withstand provided it has a well-prepared seedbed and consequent supply of moisture. In a compact soil, moisture is continually rising to the surface by capillary action, so that during the growth of the wheat plant an even supply of moisture is being fed to the roots. A deep layer of loose tilth is not necessary, 2in. being quite sufficient to act as a mulch during the driest summer weather. Crops grown on a firm bed and shallow mulch are less liable to go down in excessive wet periods, because the root system is firmly embedded in compact soil. An uneven, faulty seedbed is conducive to the ravages of 'take-all,' because the roots of a plant when penetrating downwards in a faulty seedbed strike patches of rough soil and air pockets, with a consequent reduction of the vitality of the plant. It is then that 'take-all' fungus gains hold of the plant. Fallowing and the necessary subsequent workings all tend to aerate and expose the soil to weather. Oxygen has a more free access, oxydising and hastening the decay of vegetable matter which becomes plant food and soil humus. Air circulation sweetens the soil, while the presence of oxygen stimulates root growth. Tillage breaks up the soil, making its particles capable of absorbing more moisture. The foregoing are theoretically some of the aims and benefits of soil tillage, which, if put to the test of practical experiment, will be found to hold good wherever agricultural pursuits are followed. Of course, no two soils are alike. They differ either in nature or in chemical content. A system of cultivation while correct for one is impracticable for another; and the best system of tillage must be discovered by experience and experiment. But, in every class of soil the longer it can remain bare fallow the better the chances of the eventual crop. Especially does this apply in our own district. In many parts of this district heavy black loam is to be found which is capable of being dry or summer fallowed, the benefits of which are many, such as:—Early germination of weeds, better opportunity to preserve all winter rainfall, and better facilities for storing plant foods. The fallow should be left in its rough state until after seeding, when it will be found to have pulverised to an easily workable condition. A late seeding often necessitates a second ploughing on account of the growth of weeds, but the extra labor involved is more than compensated for by the better yields obtained from early fallowing. Ploughing generally begins as soon as seeding is completed, and should be finished as soon as possible, and not later than September. The depth to plough varies in different soils, but locally 3in. to 4in. is ample—early fallowing may be done deeper, but late in the season ploughing should be shallow in order to bring it into a fair condition before harvest operations commence. Furthermore, late fallow always has a certain amount of rubbish ploughed in. This hinders later cultivations, while undecayed vegetable matter in fallow is not favorable for a healthy crop, and is liable to encourage 'take-all.' Late fallow rarely has a good seedbed at seeding, and less moisture is conserved, which fact often proves the failure of the crop in a critical period. Fallow is best left in the rough state for a short period in order to allow rubbish to dry out and the soil to pulverise. Harrows should then be used, crosswise to the furrows, in order to break down the fallow. Scarifier harrows are preferable to the plain variety, doing a much better job at any time. Red clayey soils generally need a cultivator over them in order to break up the crust which forms after rain. In even black soils, however, harrows are by far the most satisfactory implement. Provided the fallow is done in reasonable time, scarifier harrows will break down and clean the fallow of weeds in far less time than a cultivator will do it. Also, the small tines of harrows sift the lumps to the surface, and the finer soil is shaken to the bottom where a level, firm seedbed is created. Harrows must be kept in repair in order to do the work of killing weeds, and should be used as often as possible, particularly after rain. In this way moisture is prevented from evaporating, and the fallow is brought to a fine tilth in which state it may be left until after harvest, thorough tillage. During the life of the wheat plant, its roots continue to spread and penetrate the soil in all direction, so that any cultivation that improves the tilth will also benefit root growth. When the soil is well cultivated the roots spread more easily, because the supply of food is augmented. As the soil varies so much in this district, it is hard to say what depth to plough. For the light soils I think 3in. would be sufficient, and for the heavier soils from 4in. to 5in. The depth of the ploughing must always be regulated by the nature of the subsoil. During a wet season the soil becomes saturated

with moisture, and in the hot summer months the soil, if left without working, will set very hard and then crack, and the moisture will soon dry out. With good cultivation a certain amount of the moisture will be retained below the surface soil. With little cultivation a lot of this moisture evaporates and so is lost to plant life. Fallowing should commence as soon after seeding as possible, and be finished not later than the first week in September. As soon as fallowing is finished it is advisable to work the scarifier harrows, and if the land is very rough to go over it twice with the harrows. If the weeds are not too strong I prefer not to use the cultivator until late in the year, probably just before harvest, especially where wild melons are plentiful. After the cultivator, it is advisable. Every farmer should keep sheep, if only to keep fallows clear of weeds at a time when cultivation is undesirable or impossible. Working fallow during summer in a dry state is considered to be detrimental in that it encourages the presence of 'take-all.' Soil tillage is an important factor in the yield of the State wheat crops. If the average is to be raised, which is certainly possible and desirable, more attention must be paid to tillage operations. Haphazard farming is no good, for the man who chanches the seasons will make no progress in his work. If South Australia is to raise the average wheat yield, the secret lies chiefly in the methods of tillage employed by farmers generally."

SOIL TILLAGE.—A paper on this subject was also contributed by Mr. J. Painter:—"In order to secure the best returns from the land in this district, thorough cultivation is absolutely necessary. Injurious substances in the soil are rendered neutral by the free admission of air, which is brought about by deep and able to harrow once before harvest. Sheep are a necessity in helping to prepare the land, especially in the harvest months, when weeds are often brought up by the summer rains and it is not convenient to work the soil. After harvest, when the soil is dry, it is not advisable to work it, even if there are a few weeds. It is far better to let the sheep do the work, because dry working favors 'take-all.' If the land is very loose, rolling will do a lot of good, and it has much to do in preventing 'take-all.' After the first winter rains, seeding commences, the cultivator should then be worked in front of the drill, followed by light harrows." In the discussion that followed, Mr. L. Pillar advocated early fallowing. In the South-East where crops were sown on grass-ploughed ground, he had noticed weak patches of crop due to air pockets in the soil. Land which had been rolled produced a more even crop. Mr. A. N. Freebairn stated that good tillage was of more importance than heavy dressings of superphosphate. Ploughing during August and September sometimes gave better results than early ploughing of bare ground, which he attributed to the fact that a considerable quantity of green matter was ploughed in during the spring months. Late ploughing, however, required rolling. Mr. W. Brown considered that ploughing should not be done later than August in normal seasons. Early cultivation of fallow, and the production of a fine surface gave poor results in wet seasons. He advocated ploughing to a depth of 3in., and 4in. to 5in. in red patches. The latter should be left in a rough state, and not harrowed so frequently as the black soil. Mr. A. Shepherd said methods of cultivation should be varied according to the classes of soils. In lighter soils, shallow ploughing in March, followed by thorough cultivation of the soil immediately after seeding when the ground was moist, gave good results, and checked the ravages of "take-all." He favored the use of a roller on heavy soils at Alma. Messrs. E. Watts and E. Drescher favored early and shallow ploughing at a depth of 2in. to 3in. Mr. T. Y. Freebairn had noticed that the soil over which the horses passed to and from work during seeding time carried the heaviest crop. He advocated the use of a roller, and considered that a subsoil packer would prove a valuable implement on Alma soils. The Hon. Secretary (Mr. O. J. Murphy) stated that rain was the greatest factor in producing a compact seedbed. Early ploughing should be left open for a few weeks to allow the rain to compress the lower layers of the soil. Mr. W. Barclay had sandy soils to deal with. On account of the summer growth of stinkwort and potato weed he had found it necessary to cultivate the soil in dry weather, and by so doing obtained better results than by leaving the weeds until the winter rains set in. Sheep would not eat potato weed. A general discussion followed regarding the depth of ploughing. The consensus of opinion was that shallow ploughing, spring cultivation, and the use of sheep on fallow during the summer months gave the best results at Alma.

BALAKLAVA (Average annual rainfall, 16.03in.)

September 13th.—Present: 12 members.

SUITABLE WHEATS FOR MILLING.—Mr. C. Marriott contributed the following paper:—"The variety of wheat, where it has been grown, and the nature of the soil on which it was grown, its color, chemical composition, and other points all count in the production of flour of the first quality. Some varieties of wheat are more favored than others by growers on account of their heavy, grain-yielding capacity or their suitability for hay, but the chemical composition of the variety is not as a rule considered by the farmer. Great and effective work in this direction has been done by the Agricultural Colleges and Bureau of this and the other States within recent years, and although perfection is hard to attain, some very fine varieties have been produced, notably, Federation, Comeback, Bunyip, Gluyas, Smart's Early, and many other good milling sorts being in fairly general use. Other varieties such as King's Early, King's Red, Petatz Surprise, Walker's Wonder, Currawa, and York might be considered good wheats for hay, but they are not good for milling. The first consideration from a miller's standpoint is suitability for grinding. A clear, medium, hard, and tough wheat, plump in shape, with a thin, clear, golden skin is most desired, for example—Federation, Comeback, Smart's, Purple Straw, Bunyip, and other white wheats. A tough and sound wheat is necessary in order to enable the miller to separate the grain into the various parts without unduly mixing the particles. Milling aims at keeping the flour, bran, and pollard as pure as possible, hence a wheat that can be split open without unnecessarily breaking the skin, so that the flour can be scooped out, as it were, is the ideal one, producing clean, pure flour, large, flaky bran, and sharp, gritty pollard. The locality in which the wheat is grown has much effect upon the milling properties and the chemical properties of the grain. Wheat grown upon high lands, with a cooler or wetter climate, from soil containing a large proportion of humus, or decayed vegetation, is nearly always plumper and

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thinner in the skin, has a larger proportion of white flour, and in that flour a greater proportion of starch. It is, consequently, softer and more easily ground, making a white, weak flour. Wheat from low lands, limestone country, and rubble soils, with a lesser amount of moisture, produces a smaller wheat, thick in the under skin or shell of the grain, with a rich golden color. The flour is more dense and strong, has a yellow tinge, and is high in gluten content, making what is called a yellow, strong flour. Wheat from the plains, deep loamy soils, and a good average rainfall is almost perfect in itself, being firm and tough, of good average size, clear but tough in the skin, and producing a fine, flaky bran and a clear, creamy flour, fairly high in gluten content, and easily and satisfactorily ground. The varieties of soils, as apart from the locality, also greatly affect the internal chemical proportions. Limestone produces more phosphate, sugar, and nitrogen; the rich, red land gives more iron, and the black soil more soluble and fibrous parts. From the foregoing it will be seen that the ideal flour-making mixture has to be obtained by giving due consideration not only to varieties but also to the nature of the soil on which the wheat has been grown. To be successful it is necessary that the miller should have a knowledge of chemistry in order to determine the food properties of the grain, and for the purpose of testing for gluten content, strength, and starch. Flour consists of carbon, 6 parts, hydrogen 10, oxygen 5, in the following forms, and is wheat crystalline in shape. Wheat flour contains: water, 12; sol. albumen, 1.5; gluten, 8.5; starch, 74.5; sugar gum, 2; mineral, 0.5; fat, 0.5; cellulose, 0.5; total, 100. The bran contains a much larger proportion of cellulose (18) and mineral (7 per cent.), is easily torn apart. Pollard contains a greater proportion of albumen, 19 per cent., fat, 9 per cent., gum, &c., and fine particles of bran and germ that, if allowed to pass into the flour, would discolor it and prevent a light, large, creamy loaf being produced."

THE USE AND CARE OF HAY.—At a further meeting held on October 11th Mr. M. Rundle read the following paper:—"Though the tractor is being installed on many farms, and in most cases giving satisfaction, the time is not far distant when it will be considered necessary to have a stack of hay where livestock of any description are kept. Hay is the most simple form of fodder conservation for the farmer, and if provision is made for hand feeding through the scant periods of the year or through a drought, more sheep and cattle could be carried on the areas that have been set aside for grazing. The most economical method of feeding hay is to chaff it first, especially if the hay is oaten. Good wheaten hay that is fairly green can be fed to stock without much waste, but in any case the time spent in chaffing hay is time well invested. The most wasteful method of feeding hay is to throw it to stock on the ground, and because chaff-cutting plants are relatively cheap and very efficient there should be no need, except on rare occasions, to adopt this wasteful practice. With regard to the care of the hay, there are two enemies against which the farmer has to guard, mice and fire. Hay that is to be kept more than a month or two should certainly be stacked inside a mouse-proof fence. One has the choice of three or four different types of mouse-proof fences, none of which, probably, forms an absolute barrier to mice, but all of which certainly justify their erection. The type I favor consists of 6ft. x 3ft. sheets of plain galvanized iron, placed, say, 9in. to 1ft. in the ground, and a 3in. x 3in. jarrah post at every join in the iron, and a rail of 3in. x 2in. oregon (to which the top of the iron is nailed) laid flat on the top of the posts. This top rail not only strengthens the fence, but protects the iron from falling sheaves, while if thought necessary a piece of tin projecting over the side can be nailed right along the top of this rail. There are no remedies against fire, but there are certain precautions that can be taken by every farmer. The stack should not be placed too near a public roadway or railway line, nor where the wind can blow sparks from a chimney to the stack. Land around the stack should be kept free from inflammable matter. The matter of insuring the hay is one that rests with each farmer. If the stack is properly and thoroughly erected there should not be any danger of the hay being damaged with rain. The wisdom of erecting hay sheds also deserves attention. This will reduce the risk of the fodder being damaged with rain to a minimum whilst the stack is in course of erection, or when it has been opened for use. There is, of course, the disadvantage that in the event of fire the shed as well as the hay would be destroyed." A short discussion followed.

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NANTAWARRA (Annual average rainfall, 15.90in.).

August 14th.—Present: eight members and three visitors.

COST OF PRODUCTION.—Mr. S. Herbert read a paper, in which he made a comparison of the costs of producing wheat, with horses and with tractors. Dealing with the cost of putting in and harvesting 350 acres with horses he said, "The land must be ploughed, harrowed, and cultivated twice in the spring, It must be cultivated and sown and harvested, bagged, and carted to the siding. An average crop is eight bags per acre, or 2,800 bags to be carted. Harvesting operations will necessitate the employment of one man at £4 a week. This work will necessitate a 10-horse team for large implements and two spare horses. That will give two six-horse teams for an 8ft. harvester. That will mean $1\frac{1}{2}$ tons of chaff per week and two bags of oats or barley per week for nose bags. At £4 per ton, hay chaff will cost £8, and oats or barley at 7s. 6d. = 15s., making a total feeding cost of £6 15s. per week. A 10-horse team with a 12ft. combine will cultivate 110 acres a week, and maintain it under all conditions, wet or dry, which means seven weeks of seeding operations. Ploughing 350 acres with 10 or 11 horses on a seven-furrow plough at the rate of six acres per day, will take 10 weeks to fallow. To harrow with 10 horses and six harrows, will take two weeks. To cultivate twice in the spring with a 12ft. cultivator will take seven weeks. Harvesting operations with two six-horse teams and an 8ft. machine, averaging 70 acres per week, or approximately 12 acres a day, will take five weeks. To cart 2,800 bags, a 10-horse trolly, carrying 100 bags a load, and doing two trips a day will take two and a half weeks. During the year it will take the man approximately three weeks in odd days for chaff cutting and cleaning out horse stables while the team is stabled. To this list of expense must be added repairs to harness and swings, also depreciation of horse flesh. The average working life of a horse will not exceed 10 years, so that one horse must be replaced every year. The average value of a good three-year-old horse is £25. For harness repairs it is necessary to have the collars relined once every three years. The annual expenditure on this line would be:—

	£	s.	d.
4 collars relined, at 12s. 6d.	2	10	0
2 pairs hames, to replace breakages, at 12s. 6d.	1	5	0
Rope for reins and couplings	2	0	0
<hr/>			
Total harness repairs	5	15	0
Repairs swingletrees, eyebolts, &c.	2	0	0

To this list must be added depreciation on harness, namely 10 per cent. on £72, made up as follows:—

	£	s.	d.
12 collars 35s., hames 12s. 6d., winkers, 17s. 6d. =			
£3 5s. per set; 12 sets	39	0	0
12 pairs 10lb. chains, at 9d. per lb., 7s. 6d.	4	10	0
8 sets leading harness, £2 5s. per set	18	0	0
2 saddles and breechings at £4	8	0	0
Couplings and reins	2	10	0
<hr/>			
Total harness	72	0	0
10 per cent. depreciation on £72=£7 4s.			

It will also be necessary to include on the list of expenses one man for harvest work, changing horses, bag sewing, and loading wheat, for seven and a half weeks at £4=£30. The final expense for the horse team is the value of the paddock feed. The team is stabled for 36 weeks. It is necessary to keep a paddock of 80 acres for 12 horses. The value of the paddock is what it would return if utilised to derive income. An 80 acre paddock suitable to keep a team of horses, would keep 80 sheep, or one sheep to the acre, all through the

year. Eighty good wethers would, on the average, yield 12lbs. of wool per sheep—960lbs. of wool at 1s. 6d. per lb. = £72. Thus the expense of the horse team would be:—

Seeding	7 weeks			
Ploughing.. . . .	10 weeks			
Harrowing	2 weeks			
Cultivating	7 weeks			
Reaping and carting	7½ weeks			
			£	s. d.
33½ weeks at £6 15s.		226	2	6
3 weeks' stabling, without corn, £6 per week		18	0	0
Total saddler's repairs		5	15	0
Repairs swingletrees, eyebolts, &c.		2	0	0
Depreciation horseflesh		25	0	0
Harness, £72, 10 per cent. depreciation		7	4	0
One man, harvest work, 7½ weeks, at £4 per week		30	0	0
Value of paddock feed		72	0	0
Total expense		£386	1	6

The following is the approximate cost of operating a British Wallis tractor on heavy ground:

Fallowing, per acre	8 pints kerosine
Harrowing, per acre	1 " "
Cultivating, per acre	4 " "
Cultivating, per acre	4 " "
Harrowing, per acre	1 " "
Cultivating, per acre	4 " "
Sowing seed, per acre	4½ " "
Reaping, per acre	5 " "

Carting 10-bag crop on 350 acres, 15 cases kerosine.

To work 350 acres requires:—

188 cases kerosine, at 13s. 6d.	£	s.	d.
40galls. lubricating oil, at 5s. 6d.	126	18	0
6 cases petrol, at 21s.	11	0	0
80lbs. grease, at 9d. per lb.	6	6	0
Tractor depreciation, 10 per cent. on £520	3	0	0
	52	0	0
Total	£199	4	0
Bag sewing, 2,800 at 15s.	22	0	0
	£221	4	0

In the discussion that followed, Mr. R. Uppill said he thought the estimations for horsepower expenses were very reasonable, but thought that insufficient had been allowed for depreciation on the tractor. Mr. G. Herbert thought that 80 acres of good feed would return more than £72 from sheep, and a great deal more if cropped. He thought five years the life of a tractor, and would allow 20 per cent. depreciation annually.

OWEN.

October 17th.—Present: 10 members.

PIG KILLING AND BACON CURING.—Mr. W. J. Goodall read the following paper:—
 "To obtain good bacon it is first necessary to choose a pig that is healthy and in good condition. If a pig is losing flesh at the time of slaughter it contains a

higher percentage of water, which, to a certain extent, takes away some of the flavor. The pig should be kept without food for 12 hours before killing, then its body is in a less heated condition, it will bleed better and produce meat of a better quality. Be careful as to the handling of the pig while taking it to the place of slaughter, so that the flesh is not bruised.

Slaughtering.—There are two simple ways of killing a pig, first by stunning and then hanging the carcass up by the hind legs and cutting the throat. Stunning and shooting are liable to retard bleeding. The second method is by far the better way. Place the animal on its back, with one man holding the front legs, another man should hold the jaws of the pig in his left hand, and so hold the head steady. Take a knife in the right hand, and cut the skin three inches in length from the breast towards the jaw, then drive the knife in four inches or five inches at an angle of 40 degrees, and allow the animal to go. **Scalding.**—When the pig has bled to death, the next process is scalding. If there is only one animal to scald and a wooden barrel can be procured, then place it under the pulley and blocks, pour in the water and lower the carcass by the aid of pulley and blocks. If the pig is large, and one has not a suitable scalding cistern, place bags over the carcass and pour on boiling water until the hair pulls off freely. A vat is a very useful article for scalding, especially when several pigs have been killed. The temperature of the water should be from 150 degrees Fahr. to 160 degrees Fahr., according to the size of the pig and surrounding conditions. Other water tests besides that with a thermometer can be used.

Blood Test.—Take a drop of blood and drop into the water; if the blood diffuses, the water is too cold, if it remains in a drop without diffusing, it is too hot, if the blood remains in a drop for a few seconds, and then diffuses, the water is at the correct temperature. An addition of wood ash to the water will help to loosen the hair and dirt. Keep the pig moving while it is being scalded in order not to burst the skin. Remove as much of the hair and outer skin as possible while the animal is in the water. A tool shaped something like a garden hoe and called a "scud" is very useful in scraping. If the outer skin adheres, remove the pig from the hot water at once, place it on a table, and finish by scraping with a sharp knife, and pouring cold water over the carcass. When well scraped, cut tendons in the hind legs, and hang up the carcass, and shave off any remaining hairs. **Dressing.**—To remove the stomach, cut down the midline, beginning at the top and cutting down to the head. Then, if the backbone is to be taken out, cut through the pelvic bones and around the rectum, to free the back bone. Take out the stomach, heart, and lungs, &c., and leave the carcass to cool. It is well to place a stone in the mouth of the carcass to provide drainage.

Cutting Up.—Cut the carcass up when it has properly cooled. First remove the head by cutting deeply behind the ears and around the small of the neck, it will then come apart with a twist. Next, cut out the backbone, then place the sides on a table. If the bacon is to be left in sides, all that is necessary is to remove the trotters. It is not necessary to remove bones in shoulders and hams when brine salting is done, but it is necessary to break the joints to allow joint-oil to escape. Cutting up is generally done according to requirements. The only part of the head worth curing is the cheek. In the case of dry salting, it is safest to remove all bones, especially in the shoulders and hams. **Preservatives.**—Salt, saltpetre, and sugar are the most common and best preservatives. Salt, if used alone, tends to bleach the natural color of the meat; it has also a hardening effect on the finished product. Saltpetre is used because of its antiseptic properties, and it also preserves the natural color of the flesh. Use one part of saltpetre to twenty parts of salt. Sugar softens the flesh and sweetens the meat. A small quantity of baking powder added to the brine will prevent it from spoiling in warm weather. **Recipes for Curing.**—Dry salting, the following may be useful:—10lbs. of salt, 3ozs. of saltpetre, to every 100lbs. meat; 10lbs. of salt, 4lbs. of brown sugar, 2ozs. of allspice, 2ozs. of saltpetre to every 100lbs. of meat. Brine curing:—20lbs. of salt, 1lb. of saltpetre, dissolve in 10 gallons of boiling water, and allow to cool before using. 20lbs. of salt, 8lbs. of brown sugar, 1lb. of saltpetre, 2ozs. of allspice. Boil with hot water and use when cold. Brine should never be poured on

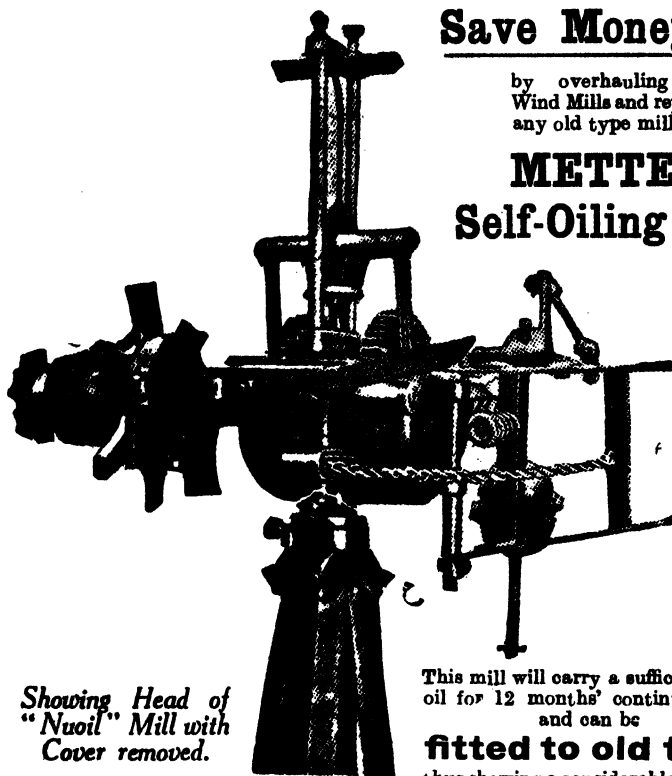
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to meat in a warm condition. Curing.—The pieces should be first well rubbed with a mixture of salt and saltpetre, to remove all blood. Place the pork flesh side downwards and allow it to drain from 12 to 24 hours. Dry Salting.—It is only necessary to rub the flesh for the first three or four days, afterwards the mixture need only be spread over the flesh. The salt should be pressed into every depression and along where the bone is exposed. Stack on floor and alter each day. Brine Curing.—The pieces are placed in brine after the first three days of salting, and the time of pickling depends upon the size of pieces. It generally takes about three weeks. If a brine pump is used, it will take a little less time, and there is the certainty that the brine will penetrate around all bones. As with dry salting, the pieces should be well worked so that the brine will penetrate well into the flesh. Smoking.—When the meat has been cured it can be prepared for smoking. This is done by washing in cold water and then allowing the pieces to soak in cold water for 24 hours. Soaking will remove excess salt. After soaking, the meat should be hung in a cool draught for two or three days for drying. The quicker this is done the better. There is so little smoking done on most farms that it would not pay to build a smoke-house, so a box or barrel will give fairly satisfactory results. Have the fire pot well away from the barrel and connect with a flue pipe to carry smoke to the meat. Sawdust and gum leaves make a suitable smoke. After smoking, rub the pieces with olive oil to preserve and give the meat a nice appearance. If the meat is to be kept for some time, it should be wrapped in heavy paper, and packed in bran." The writer acknowledges hints gained from Mr. R. Baker's article on "Farm Curing of Bacon" which appeared in the *Journal of Agriculture*.

On October 16th twenty-two members of the branch paid a visit to Roseworthy Agricultural College.

SADDLEWORTH WOMEN'S (Average annual rainfall, 19.69in.).

October 10th.—Present: nine members.

TOMATO GROWING.—The monthly meeting was held at Mrs. Warnecke's home-stand, when the following paper was read by Mrs. L. Frost:—"In this district seeds should be planted in flower pots or tins during July. If tins are used holes should be punched in the bottoms of the tins. Cover the holes with charcoal and then fill with rich soil; sprinkle in the seeds, about 12 in a 5in. pot, cover the seeds with sand, place the pots or tins in a heap of stable manure, sloping a little to the north, and cover with a glass frame. Always keep the soil moist. When the plants are about 1½in. high take the glass off in the day time. This makes the plants strong and hardy. Care should be taken to always cover them at night. When the plants are beginning to bud transplant in richly manured soil. Cut kerosine tins in halves, leaving two sides and the end on each, and put one half over each plant. Leave these over until there is no danger from frosts. Put the plants 2½ft. apart in rows 3ft. apart, and put a 4ft. stake beside each plant, and tie very carefully. Water every other day until they flower; after that a thorough soaking once a week is enough. Prune the plants by nipping out the shoots just below a bunch of flowers. Mulch well with old straw. To water, make gutters between the rows of plants and run the water along the rows." In the discussion that followed the following varieties were recommended:—Ponderosa, Early Sunrise, Burwood Prize, and Atlanta Prize. Recipes for tomato chutney, pickle, sauce, and jam, and Admiralty tomato soup were then read. White vinegar and white sugar are recommended to give a better red color to sauces or chutneys. The addition of pineapple, it was stated, improved tomato jam, and for salads, tomatoes, blanched and par-boiled white Spanish onions should be used.

BLACK SPRINGS, October 7th.—Fourteen members attended the October meeting, when a paper, "Power Farming," was read and discussed.

CLARE, October 10th.—Messrs. E. Nolan and L. Dux gave an interesting account of the 1924 Winter School for Farmers at the Roseworthy Agricultural College.

LYNDOCH, October 9th.—A paper, "Power Farming," was read by the Hon. Secretary (Mr. J. S. Hammatt), and an interesting discussion followed.

NANTAWARRA, October 30th.—The monthly meeting was held at Mr. A. F. Herbert's residence. During the afternoon members inspected the crops and plant, and in the evening Mr. Herbert gave details of the quantities of seed and super used on the different crops.

ROSEDALE, October 8th.—A paper, "Power Farming," was read, and a good discussion followed.

SALISBURY, October 7th.—A paper, "Power Farming," was read by the Hon. Secretary (Mr. A. W. Urlwin), and an interesting discussion followed.

TARLEE, October 14th.—Twenty-two members and visitors attended the meeting, when Mr. R. C. Scott (Experimentalist at the Roseworthy Agricultural College) delivered an address, "Systems of Stock Breeding and the Value of the Half-Bred Mother for Lamb Raising."

WILLIAMSTOWN WOMEN'S, September 3rd.—Mrs. Marriott read an instructive paper, "Home Carpentering," and plans were exhibited showing the many things for which petrol cases and tins could be used.

At a further meeting, held on October 1st, Mrs. Wild read a paper, "Preparing Flowers for Show Exhibits".

WILLIAMSTOWN, October 10th.—Mr. J. E. Rix read a paper, "Marketing Fruit," and the report of the delegates to the Annual Congress was received and discussed.

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KILKERRAN.

October 7th.—Present: nine members.

Mr. E. Dutschke read a paper, "Haymaking and Stacking," in which he outlined the important points connected with successful preservation of hay in stacks. Mr. B. J. Koch said that too much importance could not be placed on the condition of the binder, because the poor tying of sheaves was the cause of much annoyance, coupled with waste of time in the field. Mouse-proof stacking yards for hay were commented on, and thought well worth the initial cost, compared with the condition of hay when damaged by mice and rats. It was also essential to stack the middle of the stack, and not merely to heap it, as was often the case with some farmers. With oaten hay, Mr. B. A. Koch favored the long stooks to the round ones, because they allowed the hay to dry out more quickly.

A further meeting was held on October 21st, when a paper, "Power Farming," was read and discussed.

WEAVERS.

October 14th.—Present: 14 members and seven visitors.

SEED WHEAT.—In the course of a paper dealing with this subject Mr. S. Anderson said good seed was essential to ensure successful returns. It was a good plan to sow an area of both early and late wheats, because some years early wheats gave better yields than late wheats, and *vice versa*, and it facilitated harvesting, because the wheats ripened at different times. It was advisable to be able to reap the wheat as soon as it was ripe to save losses, and that was not possible if early or late wheats only were grown. It was very essential to thoroughly clean out the drill to ensure good seed, especially if barley had been sown. Merchants should give a better price for wheat that was free from barley in order to encourage farmers to grow clean wheat. With the harvester it was almost impossible to clean all foreign wheats out, but if cleaned out and a few of the first bags kept separate, a fair sample could be obtained. It was advisable to pickle wheat to check smut, and if the wheat had not been pickled the previous year then pickling was most essential. The following varieties could be cut for hay if not wanted for wheat: Gluyas, Improved Federation, and Nugget. It was a mistake to sow early wheats such as Gluyas on early fallow because they grew too much straw and "went down." Usually better results were obtained by sowing late wheats first and early wheats late. Red wheats should not be grown, because they spoiled the good name of Australian wheat in overseas markets.

POULTRY ON THE FARM.—"A farm is not complete without poultry," said Mr. H. A. Baker, in the course of a paper dealing with this subject. Continuing, he said that poultry were sometimes a nuisance on the farm because they pulled the hay to pieces, scratched the chaff about, robbed the horses of grain, and were allowed to roost in the stables, implement shed, and on the harness. When that occurred it was usually the fault of the farmer for not providing roosting places for the birds. If fowls were properly kept they would show a good profit. A proper fowlhouse and yard should be constructed so that the birds could be shut up at night. Given liberal feeds of wheat and a hot bran or pollard and meat meal mash the birds would keep healthy and prove a profitable side line. Clean water was essential, and ducks and geese should not be allowed to dirty the water. The water should be kept in the shade. To get the best results only the best hens should be kept for breeding purposes. The Leghorn was the best breed for egg production, while the Minorca and Rhode Island Red were also excellent breeds. Any fowls that contracted roup, diphtheria, or other diseases should immediately be taken from the main flock and destroyed. A keen discussion followed the reading of both papers.

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(Late of Federal Taxation Dept.).

ARTHURTON, October 28th.—The monthly meeting was held at the residence of Mr. A. Road, when a paper, "Power Farming," was read by Mr. H. D. Noble, and an interesting discussion ensued.

KADINA, November 7th.—A paper dealing with "Power Farming" was read by the Hon. Secretary (Mr. T. Gordon), and an interesting discussion followed. It was decided that the Branch should go into recess until the first Friday in February, 1925.

WESTERN DISTRICT.

MOUNT HOPE.

October 15th.—Present: seven members.

WOOL CLASSING.—Mr. H. F. Myers, who read a paper dealing with this subject, said he intended to outline a course for small growers with a flock of from 700 to 2,000 sheep. The clip should be divided into several classes, starting with the best fleece wool, which would be marked "AA", and should consist of all the longest, lightest, brightest, and sound fleeces. For most clips in that district, only two classes would be required, otherwise "star lots" would be made and they would not receive the same competition at the sale as the larger clips. The second class wool should be branded "A". The "A" class should contain all the short, very heavy, very lean, and tender wools. In most cases, it was only necessary to give the fleece a light skirting. All the wool should be removed from around the jaws, and any around the neck containing too many grass seeds should also be taken off. It was necessary to remove a little from the front legs. Where the fleece was stained down the sides, skirting should be done as lightly as possible, then the wool from the hind legs and all the stained parts around the tail should be removed. It was not advisable in a small clip to skirt more than was absolutely necessary, because of the danger of making "star" lots. "To roll the fleece," the paper continued, "Take one side of the fleece and fold towards the back, and then fold over again the same way. This will bring the back into the centre and then roll towards the shoulder. By following this method, the best part of the fleece will be shown outside." The pieces should be divided into two classes, "AA" being all the longest, lightest, and cleanest, and "A" being all the stained, short, heavy wool. In most clips in that district, it was not advisable to make two classes of the bellies. Any that were very inferior could be put with the pieces. In packing the wool, the bales should be sewn and branded neatly with stencils and ink, the brands being placed on one end and one side of the bale.

In addition to the ordinary monthly meeting, two special meetings were held during October, when addresses were delivered by Mr. C. Goddard (Assistant Wool Instructor at the School of Mines), and Mr. S. R. Cockburn.

WIREBULLA.

September 10th.—Present: 12 members and four visitors.

A lecture, "Best Type of Engine for Farm Use," was given by Rev. F. C. Perry, and the speaker illustrated his remarks with diagrams and the black board.

COMBINE *versus* DISC DRILL AND CULTIVATOR.—A further meeting was held on October 15th, and in the course of a paper dealing with the above subject Mr. C. L. Campbell said advantages could be claimed for both the "combine" and the "disc drill and cultivator", as a means of putting in the crop. The combine was an implement that should appeal to all farmers in that district, because the major portions of their holdings consisted of plain land. On clean fallow land one man with a 10 horse team and a 20 combine with four leaves

of harrows attached could seed the land at the rate of 30 acres per day. On stubble ground that had been cleared fairly well of the straw, one man could not expect to do the two jobs at once (drilling and harrowing), and the combine will go through far more rubbish without blocking than the harrows. To make a good job it would be necessary to have an extra man to clear the harrows, who could assist in filling and oiling the drill, or an extra man with a team of 8 or 10 leaves of harrows. On stumpy and stony ground, the combine did good work, although he thought it would not stand the strain for many seasons. There was a trip tyne jump combine on the market which, with a few minor alterations, should prove an ideal machine for mallee farms in that district. His experience was that the combine placed the seed on an even and undisturbed seed bed, and it also distributed the seed better than a disc drill. In working the disc drill and cultivator, one often had a man on each implement, with the result in most cases, that they were working the implements at different depths, which did not make a good even seed bed. The disc drill could claim an advantage in dirty ground such as buck bush and stubble or new scrub land, because it very seldom blocked and would work with good results in roots, stumps, stones, etc. He had worked a combine over 3,000 acres of scrub and plain land, the only breakage being two support springs of the tyne. He strongly favored the combine. A report of the proceedings of the Annual Congress and a visit to the Roseworthy Agricultural College was given by Messrs H. Doley and H. Campbell.

YALLUNDA FLAT (Average annual rainfall, 18in. to 19in.).

July 10th.—Present: 10 members.

HAND-FEEDING SHEEP.—The following paper was read by a member of the Branch:—"Hand-feeding sheep is a paying proposition. My own experience quite justifies this statement. Last year I fed my sheep for a short period on

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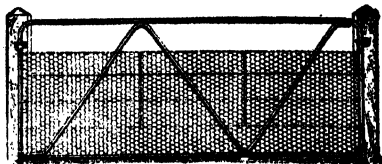


Fig. 132. Cyclone "N" Paddock Gate with round corners swung on face of posts. Can be had either rabbit-netted or with plain wires which make the gate sheep-proof.

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chaff, and it was surprising how they picked up and held condition, especially the lambs and hoggets. I gave them about 1½ lbs. per head per day for about three weeks, but this year I fed them for two months, and I can now see the benefit, because the present lambing has eclipsed all records. The ewes are stronger, and they are better mothers. Oats are more easily handled than chaff, and there is no necessity for feeders. A piece of hard ground alongside a fence is a very good place on which to feed the sheep. It is quite essential that lambing ewes should be fed separately from the flock, otherwise they are apt to be hurt by the wethers and hoggets hustling them on the feeding ground. I have found it the best plan to feed about 10 o'clock in the morning, because should there be any newly-dropped lambs, the ewes will have time to get down to the feeding ground. If feeding sheep on chaff feeders must be provided, but these should be placed in such positions that sheep cannot jump over them. A good feeder can be made of ordinary cornsacks, about 30 bags sewn end to end and threaded on No. 8 wires; this will accommodate about 200 sheep. The wires should be separated by pegs about 7 ft. apart and 9 in. high, so that the feeders are not too deep. A few stones or lumps of rock salt in the bottom of the feeders will keep the bags from flapping about. I believe that hand feeding and top dressing will increase the stock capacity of the land by 30 per cent. It does not pay to sell oats at 2s. per bushel when stock are on hand for fattening, and, in addition, it is better to market the oats in the form of live-stock. Another factor that must now be taken into consideration is the freezing works at Port Lincoln. These works will give an assured market for surplus stock, but hand feeding must be resorted to if the farmer wishes to get the stock off the farm in prime condition at the earliest possible moment. In this district much can be done in growing fodder crops and preparing for early feed. Rye gives an abundance of feed in a short time, and will stand a lot of feeding off, especially if dressed with super. Rye makes a very sappy growth, and oats mixed with rye in the ratio of one-third oats to two-thirds rye, makes a well-balanced green feed. This can be fed off until the latter end of August or the beginning of September, and then the crop can be reaped. Peas are the best feed on which to wean lambs, but lambs should not be turned on to them until they have started to turn. They will then eat the whole of the plant. Lambs fed on peas develop solid carcasses. With the prices of meat and wool, as they now stand, and are likely to stand for perhaps many years, it will pay handsomely to give every attention to stock on the farm."

COLLIE, October 25th.—Mr. J. A. Dodgson contributed a paper, "Will Cotton Rival Wool?" A report on the 1924 Annual Congress was given by Mr. E. Olsen, and a keen discussion ensued.

GREEN PATCH, October 13th.—Ten members and eight visitors attended the October meeting when an address, "Top Dressing Pasture Lands," was delivered by Mr. S. R. Cockburn.

LIPSON, October 11th.—Mr. F. Brougham gave an interesting paper, "The 1924 Winter School for Farmers at the Roseworthy Agricultural College."

McLACHLAN, October 11th.—A full report of the proceedings of the Annual Congress was tendered by Mr. W. A. Hawke, and an interesting discussion followed.

STREAKY BAY, October 11th.—The Hon. Secretary (Mr. C. Thom) read a paper, "Power Farming," and a keen discussion followed.

A further meeting was held on October 16th when an address, "Top Dressing Pastures," was given by Mr. S. R. Cockburn.

EASTERN DISTRICT.

MONARTO SOUTH (Average annual rainfall, 14 in. to 15 in.).

October 11th.—Present: 20 members and eight visitors.

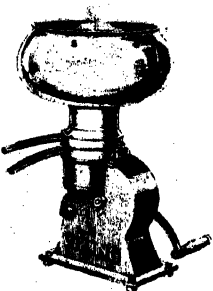
HAY-MAKING.—Mr. A. P. Braendler, who read a paper dealing with this subject, said if hay was to be stored for a few years wheaten hay was best, but it should be cut on the green side. If that was done mice would not destroy it.

any great extent, and it would be better hay when taken out of the stack. An oat crop intended for hay should not be cut too green. Better chaff would be obtained if the crop was cut a little on the ripe side. The sheaves should be well tied, and tied closer to the butt end than the head. The sheaves should be stooked closely behind the binder, and the hay would then maintain a better color, and the wind would not blow the stooks over so easily. Stooks should be made lengthways, about five sheaves wide, and should be left in the paddock about a fortnight. The knots in the middle of the stems of the stalks and grain in the heads in the middle of the stooks should be dry before carting was commenced. In the discussion that followed one member said if the hay was salted the mice would not do any great harm to the stack, and horses were fond of salted hay. To salt hay Mr. M. Nolan said he found it best to dissolve salt and sprinkle brine over the hay. He would use about 1½ cwt. of salt to 20 tons of hay. The Hon. Secretary (Mr. C. F. Altmann) said a good plan to overcome the mouse trouble was to put galvanized iron around the stack site, the iron to be 6in. in the ground, and 18in. above.

MOOROOK.

October 10th.—Present: 12 members and visitors.

QUESTION BOX.—Mr. E. W. Chaston, of the Kingston-on-Murray Branch, attended the meeting for the purpose of answering a number of questions that had been submitted by members. The first question to be dealt with was, "At what time of the year should sulphate of ammonia be applied to vines and trees?" Mr. Chaston preferred frequent light applications all through the growing period, commencing just prior to bud burst. For citrus trees Mr. Davies thought that sulphate of ammonia would be best applied at the flowering stage. "What is the best method of applying sulphate of ammonia?" Mr. Chaston suggested mixing the manure with water and spraying it on to the vines and trees. Mr. Gray suggested that for trees the sulphate of ammonia could be mixed with water and applied to the soil through the hose. It was generally considered that sulphate of ammonia should not be applied to dry soil. "What is the most convenient sized sulphur box to use in a small orchard?" Members considered that the small boxes turned out a much better sample than the large sulphur house, because by the time sufficient trays of fruit were cut to fill the large house those cut first were getting too dry for proper sulphuring, which meant an uneven sample. Mr. Chaston favored using two boxes, one to hold 16 trays, and another to hold 32 trays. Mr. S. Sanders thought one to hold 12 and another to hold 24 trays would be large enough. "Should barren shoots of the sultana be removed?" Mr. Chaston was in favor of nipping the top of the barren shoot



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unless it rose from the permanent arm, when it should be left alone. Nipping, he thought, would be sufficient check. Mr. Davies thought that barren shoots arising from ends of the canes could be removed entirely, to ensure a better growth at the more permanent parts of the vine.

MOOROOK.

October 27th.—Present: 20 members and 10 visitors.

CINCTURING.—Mr. C. G. Savage (Manager of the Berri Orchard and Deputy Horticultural Instructor) delivered an address dealing with this subject, and in the discussion that followed Mr. Savage stated that at the Berri Orchard he had cinctured both before and after an irrigation, and had not noticed any difference in the resulting setting of fruit. "How old should an orange tree be before it is advisable to cincture it?" he was asked. Mr. Savage said it should be at least seven years old, and should not even then be cinctured unless it had failed to produce a fair crop.

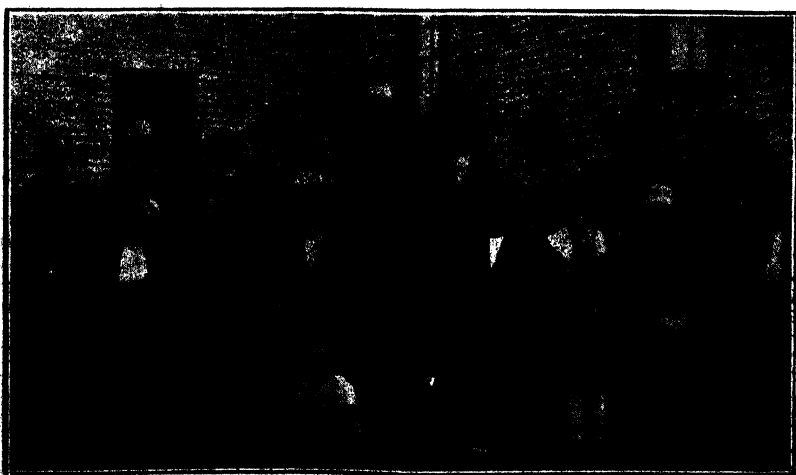
RACK BUILDING.—Mr. Savage in dealing with this subject said he proposed to open his remarks by advocating a return to the old method of drying grape fruits on trays. The fixed rack had displaced the older method, but it had been found that the older method produced by far the better quality article. As an instance he spoke of some tray-dried currants produced at the Berri Experimental Orchard. When taken to the packing shed at Berri, the fruit was found to be so superior that it was classed a special grade and packed separately. Describing the netting tray, Mr. Savage said the netting tray had many advantages over the rack. The fruit could be removed without damaging the berries, and in the case of the currant, without rubbing off the bloom. Both of these advantages were of vital importance to growers at the present time, when they should put every effort forward to produce the finest products attainable to gain the confidence of buyers on the overseas markets. The trays could be used to finish off the fruit in the dehydrator, provided, of course, they were built to fit the machine, without the necessity for rubbing the fruit off the racks and transferring it to trays. The size of the tray would vary according to the dimensions of the dehydrator if such plant were available. A convenient sized tray could be made as follows, size, 8ft. x 3ft. 9in. The ends should be made of 3in. x 1½in. oregon. A tray of that size would take 3ft. 6in. netting. The netting should be stretched tightly along the tray and the ends drawn and secured along the side pieces. The cross stretching of the netting would keep the tray rigid and the netting from sagging. The ends of the netting should be covered with a light batten, in order to protect the cut ends of the wire. The corners should be bound with hoop iron. The trays when loaded with fruit were stacked either in temporary piles or on skeleton rack frames. When placed in piles, the trays were separated by means of 3in. or 4in. wooden blocks, and when the piles were not carried to a great height, the empty 1lb. caustic soda tins would be found suitable for spacing the trays. Six blocks were required for each tray; one at each corner and one at either end of the central timber. The trays could be stacked by placing out the bottom trays and spacing them so that the alternate trays would rest on the ends of the bottom trays. Thus by placing the trays on alternate stacks, supports were only needed for the two ends. Temporary covers could be built over the stacks to protect the fruit from the weather. When skeleton racks were built, frames made as under would be found convenient in which to stack the trays:—Jarrah uprights 9ft. long x 3in. x 3in. The posts on one side of the rack placed 2ft. in the ground, and on the other 1ft. 10in. in the ground to allow for a 2in. fall on the roof. Posts placed 3ft. apart with a cross batten of 3in. x 2in. oregon bolted near the bottom would prevent the posts from spreading when the rack was laden with fruit, the tops being secured by roofing iron. The frames should be placed 8ft. 2in. apart, to allow the trays to be slipped in and out should they become warped. The height of the frame would allow sufficient room for eight trays 9in. apart, or six trays 12in. apart in the rack. The trays should be supported on the frames, either on ½in. iron pegs or on rails. The trays were then loaded over a hessian and when full could be slipped into the rack. To remove the fruit when dried, the trays should be withdrawn, one man taking either end. The tray was held over a

hessian and turned over, and was then given a couple of sharp shakes. The fruit left the tray quite freely. That method saved damaging the berries as was done by rubbing off the rack. Split and damaged fruit did much to detract from the appearance of the packed article, and probably with over dipping, was chiefly responsible for the sugaring of Lexias. Mr. Savage further supplemented his remarks with a description of various types of fixed racks. One of the chief points of these remarks was the erecting of the strainers. He showed how, by placing a bolster at the back and base, and another just below the ground level at the front of the strainer, one could do without such unsightly objects as struts and "dead men." Roofing timber should never be fastened to the strainers, because there was always a certain amount of "give" when the rack was loaded with fruit, which caused the roof to buckle if fastened direct to the strainers.

NETHERTON.

October 8th.—Present: seven members and four visitors.

HAY-MAKING.—In the course of a paper dealing with this subject Mr. C. M. Wilkin suggested that the land intended for the hay crop should be fallowed in June and worked back in the spring, and after summer rains the harrows should be used. He was of the opinion that oats were the best cereal for hay in that district. The seed should be sown early at the rate of 1 to 1½ bushels, with 1 cwt. of super to the acre. The sheaves should be tied tightly, and if the weather was hot the sheaves should be stooked immediately after the binder. If the hay was to be carted at once, long stooks should be made, but if carting was delayed, large, round stooks were preferable. In warm weather the hay would be ready for the stack in about 12 days. He suggested cutting the crop on the green side, say, about three weeks after coming out in ear, because the stock would then eat it readily and waste less when fed as long hay. The long narrow stack was the best and most convenient to build. Care should be taken to keep the middle of the stack full to form a slope on the sheaves to drain off rain. While the stack was being built he recommended the plan of sprinkling the hay liberally with salt. That helped to cure the hay, made it more palatable, and mice did not do so much damage. The roof should be steep and covered with straw. A short discussion followed.



Ladies who Attended the Inaugural Meeting of the Wilkawatt (Women's) Branch of the Agricultural Bureau.

PINNAROO WOMEN'S (Average annual rainfall, 16.74in.).

October 3rd.—Present: 13 members.

COOKING.—The following recipes for tart-making were read by Mrs. Sharrad:—“1lb. flour, 1lb. butter, and the juice of one lemon; add a small quantity of salt; put ½lb. butter into the flour and add a little sugar. Beat the yolks of two eggs and enough cold water to make a nice dough. Add the balance of the butter and spread three times, about one hour between each. For plain tarts 1lb. flour, ½lb. good beef dripping, juice of one large lemon, a little salt, and a pinch of sugar. Beat the yolks of two eggs and enough cold water to make a nice dough. Beat in about half the dripping and put aside for an hour or more; then spread the other half and roll until the dripping is rolled well into the dough. Use white of eggs to garnish the top before baking. For the best results pastry should be baked in a quick oven for about 10 minutes.

POOCHERA.

November 5th.—Present: 13 members.

STACK BUILDING.—Mr. O. Bohlin read a paper dealing with this subject, in the course of which he said prior to building the stack, it was first necessary to consider the area of land that would be required on which to build the stack. A farmer could form an approximate estimate of the amount of hay he had to stack by allowing 2 tons to every ball of twine that had been used, and then allowing 12 to 13 cubic yards to every ton for space in the stack. When the area for the stack had been measured, it was advisable to place dunnage or dry straw on the ground to prevent the bottom layer of sheaves from being spoiled with damp. The first sheaves of the stack should be placed butt outwards and then tied in the ordinary way. Then, the next sheaves should be butted to the butts of the tied row and the person building the stack should keep tying back to the centre of the stack. The next tier of sheaves should be placed with heads out with the bands of the sheaves placed just over the butted ties of the previous tier. These in turn could be butted and then tied back to the stack centre. That mode of building would raise the crown of the stack, and when raised 2ft. or 3ft. above the outside sheaves, the work could be continued by laying the outside sheaves butts out and then tying back to the centre, with heads out just far enough to cover the band of each preceding row of sheaves. He preferred placing the sheaves on a cant with the longest side of the butt of the sheaf upwards. By starting one tier and working from right to left around the stack, and the next left to right, the butts of sheaves when viewed from the side of the stack should appear zig-zag from top to bottom. When the “leg” of the stack had been built, which should be from 10ft. to 12ft., the crown should be raised to a height of 5ft. or 6ft. The topping of the stack could then be commenced by forming the eaves, the butts of the sheaves being projected 3in. or 4in. over the leg, with the long side of the butt downwards. These sheaves should be securely tied by placing the heads of the next row of sheaves well out. If the crown was well raised each succeeding tier could be drawn into the bands of the tier just previously built, until the stack top was drawn in. If the stack was to stand through the winter it was advisable, when reaping was finished, to roof with straw. He also preferred building round ends to the stacks, because that did not require so much twine and care as square cornered stacks.

ROBERTS AND VEEHAN.

October 9th.—Present: 10 members.

CARE OF HORSES.—Mr. D. Jonas, in the course of a paper dealing with this subject, said the first consideration in the welfare of horses was good warm stables, which should be situated facing the east, and on rising ground. Each

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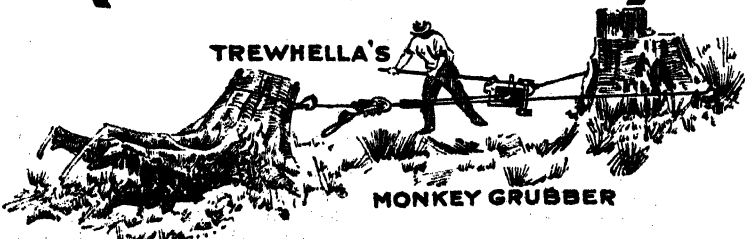
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horse should be kept in a separate stall whilst feeding in the stables. A piece of rock salt should be kept in each manger, the horses watered with good, clean water before meals, and fed at regular hours with wholesome fodder. A small amount of salt should be added to the feed if it had not already been distributed through the hay stack. Too much feed should not be given at one time, for if not cleaned up, it would become stale and spoil any fresh feed that might be added. Grooming not only cleaned the coat and skin, but made the horse healthier and improved its appetite and condition. If the teamster did not have the time to groom the horses properly, he should see that the sweat marks of the harness, especially under the collars, were cleaned off. A good plan was to turn the horses on to a sand patch after a day's work, for the horses enjoyed a roll. Horses should be given a tonic when brought in from the paddocks if they were not in good condition. A bran mash at night, and a drench the next morning of a bottle of linseed oil and two tablespoonfuls of turpentine, well shaken, followed with a drench of two quarts of milk and $\frac{1}{2}$ lb. of treacle would prove a useful tonic. Horses should only be worked part of the day at first after being spelled in the paddock, because they were then soft and easily exhausted. The hand should be run over the shoulders, and care taken to notice any tender places when the horse flinched. The shoulders, when sore or tender, should be bathed with cold water, to which a small quantity of salt had been added. With some horses it was almost impossible to keep the shoulders free from sores, and he had found it a good plan to boil a handful of wattle bark in a pan of water, pour off the liquid into a bottle, and occasionally bathe the shoulders with the solution. A breastplate could also be used until the shoulders healed. A tablespoonful of sulphur administered occasionally would assist in keeping the blood cool. A strong bottle should be kept handy in the stable for the purpose of tapping the lining of the collar to remove all hard lumps or make a hollow place to fit over a sore or tender spot. Collars should fit somewhat tightly to the side of the horse's neck and not be too long. The draught of the hames should be set correctly and the mane taken out from under the collar. He preferred a leather-lined pipe collar, because it was free from hard lumps and could be washed with warm water and soft soap. When dry, a coat of neatsfoot oil would keep the leather pliable and in good condition. The team should be driven steadily when turning corners, because if hurried unduly, injury was likely to occur to the coronets of the horses' feet. For farm utility work, he favored a medium active three-quarter bred draught horse, fairly clean legged, well ribbed barrel, and with the ability to travel at a good even pace that would do a day's work without getting leg weary. because feed and time would be saved and one could obtain a maximum of efficiency with a minimum of cost.

WAIKERIE (Average annual rainfall, 8.89in.).

October 11th.—Present: 23 members and two visitors.

CINCTURING.—Mr. F. Elliott read the following paper:—"In cincturing the currant, I favor the single knife cut. This has always given the best results both in regard to quantity and quality of fruit; the double cut causes large wounds on the vine and more "buck" currants amongst the fruit. The correct time to cincture is when three parts of the caps have fallen to the ground. Early cincturing is the cause of so many inactive red berries in the harvested fruit. When the fruit is nearing the right condition for the operation, examine the vine and remove all rough bark from where the cincture is to be made. Choose a place where the vines are smooth and round, so that an even cut can be made, and so avoid, if possible, hollows in the stem where one is apt to miss cutting through the bark and so nullify the work. When making the cut, use the knife with the edge slightly on the up-grade, and be careful not to cut through the sap wood, because that causes the vine to have a sickly yellow appearance on the foliage. A noticeable feature on the stems of vines that have been cinctured near the same place for many years is that the stem is much larger above the repeated

cincture as compared with the stem below, and this is a sign that the cincturing has been of too severe a nature. Growers should not cincture on top of a previous cincture, but select another spot a few inches away." In answering questions during the discussion that followed Mr. Elliott said he was not in favor of cincturing the sultana, because it tended to make the vine grow spindly wood that was unfit to produce subsequent crops, he was more in favor of disbudding in order to ensure a good setting. He had cinctured Gordos with success for a couple of seasons, but found the vines commencing to make spindly growth, so he desisted. He was also of the opinion that fruit from cinctured sultanas was deficient in sugar, and so dried out lighter.

WYNARKA.

October 17th.—Present: 13 members and visitors.

WORKING COSTS OF THE TRACTOR.—Mr. Polkinghorne supplied the following costs of working a tractor:—"Seeding 292 acres, covering the area once with a combine and set of 6 leaf harrows, total cost £28 8s. for kerosine, grease, and oil, 2s. per acre. Fallowing 140 acres with 10-furrow skim plough, 5ft. 6in. cut, to a depth of 2in. to 2½in., cost £11 2s. for fuel, 1s. 6d. per acre, ploughed at the rate of two acres an hour. One and a quarter hours each day were required to prepare the tractor for the day's work. Repair bill to date was 30s., and £6 for the assistance of an expert. So far, he was satisfied with the tractor, but it was too early to say what the upkeep would be. Members agreed that the seeding and fallowing had been done cheaply with the tractor. Messrs. Rackham and Priest reported on the Veitch Conference.

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BARMERA, October 13th.—The Deputy Horticultural Instructor and Manager of the Berri Orchard (Mr. C. G. Savage) delivered an address, "Cincturing the Currant," to a gathering of 23 members. Mr. Savage also discussed with members the subject, "Summer Cultivation."

BERRI, October 13th.—The Hon. Secretary (Mr. W. R. Lewis) read a paper, "Power Farming," which aroused an interesting discussion.

BRINKLEY, October 18th.—**HOMESTEAD MEETING.**—The annual homestead meeting of the Brinkley Branch was held for the third year in succession at Mr. E. W. Pearson's residence. There was an excellent attendance of members and visitors. After dinner, which was provided by Mrs. Pearson, the visitors inspected the machinery and plant, crops, and livestock. The ordinary Bureau meeting was held in the evening, when a paper, "Power Farming," was read and discussed.

KRINGIN, August 8th.—The Hon. Secretary (Mr. F. C. Tee) read a paper, "Power Farming," and a keen discussion ensued.

LAMEROO, October 11th.—The Hon. Secretary (Mr. H. J. Blake) read a paper, "Power Farming," and an interesting discussion followed.

MYPOLONGA, October 27th.—Twenty members and several visitors attended the October meeting, when the Chief Agricultural Instructor (Mr. W. J. Spafford) delivered an address, "Summer Fodders."

NETHERTON, November 5th.—Papers dealing with the subject, "Poultry Raising," were read by Messrs Cottle and Dannenberg, and an instructive discussion followed.

PINNABOO (Women's), November 7th.—Fourteen members attended the November meeting when a report of the Women's Session of the recent Agricultural Bureau Congress was given by Mrs. Sands. Mrs. Jones then read extracts from a lecture that had been given to women members of the Agricultural Bureau by Dr. Gertrude Halley, "Care of Children."

TAPLAN, September 30th.—Mr. E. Heinze submitted a short paper dealing with the subject, "Mixed Farming," and an interesting discussion ensued.

WILKAWATT (Women's), November 11th.—Ten members and seven visitors attended the meeting, which took the form of a "Recipe Afternoon." Each member read a cooking recipe and many of the members also brought the food made from the recipe, which was served with the afternoon tea.

SOUTH AND HILLS DISTRICT.

CYGNET RIVER.

September 23rd.

FRUIT DRYING.—In the course of a short paper dealing with this subject Mr. J. J. Osterstock said the following suggestions would apply only to the orchardist drying a small quantity for retail sale or for home use:—Trays should be neatly made with 2 in. x 1 in. timber for the sides, and $\frac{1}{2}$ in. or $\frac{3}{4}$ in. timber for the bottom, the size of the trays depending on whether they would be worked single or double handed. A sulphur box could be made of very light timber, stayed and stiffened with laths, covered with hessian, and papered inside to make it air-tight, and of a size to cover a stack of 18 to 24 trays comfortably. All light colored and cut fruits should be subjected to sulphur fumes. Prunes, plums, grapes, &c., should be dipped in a solution of caustic soda to crack the skins. The fruit should then be emptied on to the trays, and after cooling, it could be placed in the sun. About half an hour after emptying the dipped fruit on to the trays, the trays should be gently disturbed to see that none of the fruits were stuck together, or to

the trays. For best results the fruit should be perfectly ripe; not sloppy. The fruit should be cut and the trays filled quickly and sulphured at once. Best results would be obtained if the work were done in the evening. The fruit should remain in the sulphur box until morning, when it should be placed in a position off the ground, out of the dust, to receive the sun during the day. Cut apricots, peaches, nectarines, &c., required four to five days good weather to dry properly, whilst whole fruits required a little longer. So soon as sufficiently dry the fruit could be emptied into boxes loosely for a day or two, and then packed tightly, to remain until required.

A further meeting was held on October 22nd, when a paper, "Power Farming," was read and discussed.

MACGILLIVRAY (Average annual rainfall, 19in. to 20in.).

August 7th.—Present: eight members and visitors.

BEE CULTURE.—Mr. H. Seagar read the following paper:—"Many years ago an Act was passed by the South Australian Government proclaiming Kangaroo Island a sanctuary for pure Italian bees, and the Act prohibited the introduction of any other kind of honey bee. The Government imported pure Italian bees from Italy with the object of making the Island the chief queen producing centre in Australia, and the original Italian bees in Victoria were obtained from Kangaroo Island. At the present time, whatever the reason may be, the Island is not availing itself of this great opportunity. Bees are extremely scarce and hard to procure. So scarce are they that pumpkins cannot be grown in this district without artificial inoculation. To those desirous of making a start, I advise securing a hive during August or obtaining a swarm or two in the spring. Do not have more than a couple of hives the first season, and gradually work up to 10 or 12 hives. Do not attempt anything greater until you have become thoroughly conversant with the bee and its habits; and the carrying capacity of the district. For the beginner, a couple of Langstroth hives with supers, frames with full sheets of foundation, wire for the frames, Daisy wax-embedder, good smoker, bee veil, and a hive tool will be required. Normally, the hive consists of three kinds of inhabitants, i.e., the queen, workers, drones. The queen is the only developed female in the hive. She lays all the eggs, and is easily distinguished from the others, being the largest insect and having the longest abdomen. She never leaves the hive after she starts to lay eggs for the first time, except with the swarm. The workers are undeveloped females and constitute by far the largest number in the hive. These gather nectar from flowers, &c., make honey, and do all the work in the hive. The drone is the male bee and is much larger than the worker, and has a blunt abdomen. In the autumn, when the bees have finished gathering honey the drones are driven from the hive by their sisters and perish. Those that attempt to return are killed. With the first warm days of spring, the bees emerge from their winter quarters and forage in the fields, to gather nectar and pollen from almonds and other early flowering plants. The queen commences to lay eggs and deposits one at the bottom of each worker's cell, laying some hundreds a day, increasing the number to 2,000 a day at the height of the season. Like most insects, the bee passes through four stages in its existence, i.e., egg, larva, pupa, and the perfect bee. Three days after it is laid the egg hatches, and a tiny grub appears. The grub is then fed by the bee nurse. It rapidly grows in size until it almost fills the whole cell. It is then capped over by the bees with pollen and honey. The insect then spins a cocoon and enters upon its third stage. At the end of 21 days from the time the egg was laid, it emerges from the cell a perfect bee. The queen takes 16 days, and drones 24 days to develop. The young bee does not enter upon its duties of gathering honey straight away, but for several days it acts as nurse and performs the most arduous duty of all, that of making wax. The colony rapidly increases in size, and then the queen lays eggs in the drone cells. About the end of August, or later, other cells begin to appear, which are much longer and somewhat the shape of the little finger. These are queen cells. The queen does not lay special eggs, but these are only worker eggs selected by the workers three days before the egg is hatched. When the egg hatches the bees feed the grub on special food called "royal jelly." It is this food that develops the queen

bee. On a warm day, a few days or hours before the young queens emerge from their cells, the first swarm leaves the hive with the old queen at its head. When they swarm the bees send out scouts to locate a new home. On leaving the hive, the swarm does not make straight for the new home, but as a rule, settles on a bush or tree near the old hive until the scouts return. This is when the apiarist generally obtains them. On reaching the new hive, the bees immediately make wax and build comb from the honey they have brought from the old hive. All cracks and holes are sealed up with propolis. The queen then lays eggs and builds up the strength of the hive, and the bees gather honey and prepare for the winter. The first young queen to hatch out will kill all the other young queens, if the bees do not prevent her. After several preliminary flights to locate the position of the hive, the queen will fly into the air on her nuptial flight. Three or four days after this has taken place she will begin to lay eggs. If the bees so decide to send off more swarms, she will not be allowed to kill the other young queens, but she will be sent off at the head of another or secondary swarm. Swarming is a natural impulse of the bees, but it weakens the hives and lessens the surplus honey, and for this reason apiarists endeavor to discourage swarming. The bees continue storing honey until winter, when the queen stops laying, the drones are expelled, and the hive remains quiet until the following spring. After securing a swarm, place it at night in a bran bag to bring it home, because most of the bees are out in the fields in the day time. See that there are no holes in the bag and do not leave the bees in the bag more than a few hours, otherwise they will gnaw their way out. On reaching home, having previously selected a site (facing the morning sun and sheltered from the south-west gales and ants), remove the bag and place the hive in position. To transfer the bees to the new hive, select a warm day (never touch them on a cold day or late in the afternoon). Approach the hive from behind or the side. Blow a puff or two of smoke in the entrance and gently move the hive to one side. Using more smoke gently turn the box upside down, and place the new hive on top of it; then, sitting behind it, rattle with sticks the two sides of the old hive. This will cause the bees to run into the new hive. Continue beating the sides for about half an hour, until all the bees are in the new hive. Then place the new hive, with the bees in it, on the old stand. The new hive must be in exactly the same position as the old one. If it is necessary to move them they must be taken at least two miles away for a few weeks and then brought back, otherwise the bees will make back to the old site. Take out the sides of the old box, and if there are any slabs of brood worth saving, place them into frames that are not wired. Tie the brood into the frames with string and place them in the brood chamber of the new hive. No honey or comb must be left lying about. The hives are examined in the spring to ascertain that the queen is all right and laying and to get an idea when the bees are likely to swarm. If new eggs (one in each cell) are found in the cells and brood in all stages, then the queen is all right. Then look for queen cells. They are generally found on the bottom edge of the comb. If queen cells are found they will soon swarm. When the cells are capped over, remove all except the best, in order to try and prevent more than one swarm leaving and weakening the hive. If the weather is favorable, bees will swarm about three days after the cells are capped. Use a puff or two of smoke in the entrance to drive in the guards, then lift the rear cover of the hive to blow in a puff or two of smoke. Wait a few seconds, then lift the cover off gently. Use the hive tool gently to prize loose the frames, and, using a little more smoke, lift the frames out for examination."

McLAREN FLAT.

October 13th.—Present: 33 members.

QUESTION BOX.—Many interesting questions were brought forward for consideration, and the following were discussed and answered:—"Which is the better plan, to feed off weeds in the vineyard or plough them in?" Ploughing in was favored by the majority of the members. "Should the first ploughing be deep,

7in., or shallower, say 4in.?" Five inches was considered deep enough for the first ploughing, and 4in. for the second. "Is it detrimental to the vines if surface roots are cut when the land is ploughed deeply?" The opinion was expressed that if ploughing was done at a uniform depth each year surface roots would be scarce. If roots were cut late in the season there was a danger of the vine bleeding. In sandy soil there were always surface roots, which, if cut, apparently did not affect the vine.

MORPHETT VALE (Average annual rainfall, 23.32in.)

October 14th.—Present: 18 members.

PEAS v. BARE FALLOW.—Mr. W. Williamson read the following paper:—"The practice among many farmers in this district is to fallow every alternate year, but when the minimum price of land is about £20 per acre, one crop every second year is not sufficient to pay interest on capital outlay. Take as an example an 80-acre paddock of fallow sown for hay, which should return three tons per acre at £3 10s. per ton, amounting to £10 10s. per acre for the two years' harvest. On the other hand, an 80-acre paddock sown to peas the year the other paddock was fallowed, would average eight bags per acre at 18s. per bag, being £7 4s. per acre. The following year the pea paddock is sown to hay, returning a crop of two tons per acre at £3 10s. per ton. On the two years' crop there is a gross return of £14 4s. per acre against the bare fallow crop of £10 10s. per acre, showing a profit on the peas of £3 14s. per acre. The hay land may be again utilised by sowing barley the following year, and then fallowing on the fourth year. In addition, the pea crop will return another £1 per acre, because one can fatten two sheep to the acre after the crop has been taken off, whereas the hay stubble on fallow will only provide grazing for sheep for a short time. Peas will, in the course of a few years, be recognised as a substitute to fallow in the ordinary rotation. After two or three crops of

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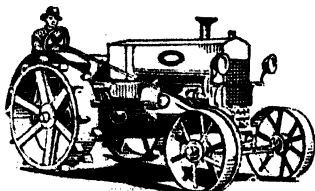
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peas have been harvested, and the straw worked back into the land, more especially in the heavy soils, it will be 50 per cent. better for hay growing than it would have been had there been no pea straw."

SHOAL BAY.

September 19th.—Present: nine members.

MERINO SHEEP.—Mr. G. Buck, in the course of a short paper dealing with this subject, first referred to the value of the Merino sheep to the Australian wool industry. By a careful selection of rams and ewes he had been able in four years to increase the yield of his flock from 7lbs. of wool per head to 12lbs. per head. The writer then gave a description of the points of a desirable sire for the head of the flock. In preparing the clip for market he thought that on the averaged-sized farm it was only necessary to make two classes, one for the best wool and one for tender and short stapled wools. The fleeces should be carefully skirted, and stencil plates used for branding bales and packages.

CURRENCY CREEK, October 10th.—The Hon. Secretary (Mr. D. Gordon) read a paper, "Power Farming," and a keen discussion followed.

IRONBANK, October 10th.—Mr. F. Hill read a paper, "Improvement of Pastures." In the discussion that followed it was thought that in the Ironbank district manure should be applied in the spring to secure the best results, especially if water soluble phosphate was used.

IRONBANK, November 7th.—A paper, "Regrafting Apple Trees," was contributed by Mr. G. Pole, and a keen and instructive discussion ensued.

KANGARILLA, October 10th.—Mr. G. Connor read a paper, "Power Farming," which aroused a keen and interesting discussion.

MACGILLIVRAY, September 17th.—The Hon. Secretary (Mr. R. Wheaton) tendered reports of the Annual Congress and the Conference of Southern Branches of the Agricultural Bureau, and a keen discussion followed.

MACGILLIVRAY, October 14th.—The Hon. Secretary (Mr. R. Wheaton) read a paper, "Green Feed and Its Advantages and Dangers" from the *Journal of Agriculture*, and a good discussion followed.

ROCKWOOD, October 13th.—Mr. J. Steed read a paper, "Lessons from the 1924 Annual Congress." This created keen and interesting discussion.

STRATHALBYN, October 14th.—Twenty-two members attended the meeting when an address, "The Value of Carbonate of Lime as a Fertiliser," was given by Mr. W. A. Hamilton. Life Membership.—Mr. J. H. Tucker handed to Messrs. J. R. Rankine and F. W. Allison Life Membership Certificates of the Agricultural Bureau of South Australia.

TWEEDVALE, October 9th.—The Government Poultry Expert (Mr. D. F. Laurie) delivered an address, "Some Phases of the Poultry Industry," to a gathering of 39 members and nine visitors.

SOUTH-EAST DISTRICT.

KALANGADOO WOMEN'S (Average annual rainfall, 33in. to 34in.).

October 11th.—Present: 12 members.

CULTIVATION OF FLOWERS.—In the course of a paper dealing with this subject Mrs. D. Tucker first referred to the cultivation of gladiolus. She said the soil for these flowers should be dug to the depth of the spade, and a liberal amount of cow manure and a small quantity of bone dust and lime worked into the soil. When the bed had been well prepared drills 6in. deep should be made and a further

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THE AGRICULTURAL BUREAU.—Particulars of this Organization, of which every farmer should be a member, can be had on application to the Department.

sprinkling of bone dust applied. The drills should then be covered with 2in. of soil, the bulbs planted in the rows 9in. apart, and then covered. The secret of growing the best blooms was to mulch and water heavily. Gladioli could be planted at almost any time of the year, but undoubtedly the best time for planting was from June to the end of August. If planted at that time they would flower during spring. As the bulbs pass out of flower the spikes should be cut off to prevent exhaustion of the corm by seed formation. Directly the lower leaves began to turn yellow the corms (or bulbs) could be lifted, and the stems cut off about 1in. above the corm and stored away in a cool, dry place with plenty of air circulation. When planting again, only the best bulbs should be selected, and all the small corms should be rubbed off. The writer advised digging the bed two or three times, and adding lime, soot, and bone dust to sweeten the soil before planting the bulbs. The carnation was one of the choicest flowers that could be grown, and was admired by every flower-lover. Some people became disappointed with carnations because they rapidly deteriorated in vigor; the blooms suffered in proportion, and the plants soon became untidy. To avoid that, cuttings from old plants should be put in every two or three years. The carnation favored a well drained sandy soil for rooting, and the majority of varieties would root rapidly in the open bed. The best type of cutting was a young shoot from a main stem, taking off the bottom leaves with a sharp knife. When planting the soil should be packed firmly around the roots. The addition of lime to the soil would prove beneficial. If the soil were wet it was advisable to plant on a high bed to allow for drainage. For winter months the garden could be made gay by primulas gladioli, and if planted in February and March would give a wonderful display of dainty and graceful flowers. Iceland poppy seed if planted in January would be ready for transplanting in March. As the old flowers faded they should be picked off. That would increase the blooms and prolong blooming. Primula made a good companion for the Iceland poppy, and should be sown early. French marigolds made a good show. Viola, stock, nemesia, pansies, perennial candytuft, ranunculus, anemone, and English daisies were splendid flowers for massing purposes. The seeds should be sown in January. Seed of the winter flowering sweet pea should be sown in March, and they would flower in August and September. It was first necessary to dig a deep trench and put into it a good supply of manure. The soil should be returned to the trench and a small drill made on each side of the netting and the peas dropped in 2in. apart. When about 6in. high another lot of manure should be added to the surface, or the plants could be watered with liquid manure. When commencing to flower, liberal applications of water should be made at the end of August, when another lot for later flowering could be sown and treated in the same manner. There were many beautiful flowers for spring and summer growing, some of the most popular being cineraria, celosia, asters, cosmos, Brompton stock, salpiglossis, schizanthus, viola, carnation, phlox, gladioli, giant zinnia, bonfire salvia, and delphinium, and these required manure, lime, and soot. It was necessary continually to stir the soil so that it would not cake around the roots of the plants, and thus prevent the sun from getting into the soil.

KONGORONG.

October 18th.—Present: nine members.

WOOL CLASSING.—Mr. R. Collins, in the course of a paper dealing with this subject, said when preparations were being made for the classing of the clip the farmer should decide whether the wool was to be reclassified. If that were decided upon, where the flock was a very mixed one he advised first drafting the strong woolled sheep from those with fine fleeces, but it did not make a great deal of difference where there were only two or three bales of wool. The fleeces should be skirted cleanly, not too heavily, and rolled neatly, leaving the shoulder showing. The fleeces could then be placed in the bale. On no account should the wool be permitted to come into contact with any vegetable matter. Pieces, bellies, and locks should be placed in separate bags, and sent on to the wool store with instructions to re-class. If fleeces were to be classed on the holding it was also advisable to class the

sheep first. For 500 or more fully grown sheep he suggested making two classes of pieces, but more would be necessary if the flock was a very mixed one. The stained wool could easily be dried by placing it on a bag or sheet in the sun.

PENOLA (Average annual rainfall, 26.78in.).

November 1st.—Present: 18 members.

The November meeting was held at the residence of Mr. A. Adamson, when a series of experimental plots being conducted by Mr. Adamson was inspected. A plot of seven acres of peas had a very healthy appearance, and gave every indication of giving a good yield. Hay crops of oats and wheat were expected to cut a payable return. It was expected that a crop of Prior's barley, although patchy and rather spindly would fill out and harvest a good average. A paddock devoted to rye and alsike clover was in excellent condition, but ravages of the lucerne flea were in evidence. Finally a plot of subterranean clover, which had been top dressed, was inspected, and members were very much impressed with the wonderful growth which the clover had made.

TANTANOOLA.

November 1st.—Present: 13 members.

SOWING SEED AT VARIOUS DISTANCES APART.—A contributed paper on sowing grain at 3½in. intervals instead of 7in. as was the usual practice, was read by the Hon. Secretary (Mr. R. Campbell). The salient points of the paper were: (1) That 3½in. distribution was practically equal to broadcasting without its disadvantages, and having the seed more evenly distributed over the surface, and not heaped up in lines as in the wider spacing. (2) It effectually smothered weeds, such as wild oats and mustard, which flourished between the wider rows. (3) Sowing 3½in. apart did not mean heavier seeding, but the seed was sown over more ground. (4) Better distribution of the seed ensured a better shading of the ground from the rays of the sun. (5) Better distribution of the manure left the pastures in better heart. In the discussion that followed, members were of the opinion that on the heavy lands of the district the closer seeding was not advisable, because even with the 7in. spacing it was often a difficult job if the land was at all dirty or sticky. The consensus of opinion was against using 1½bush. of wheat for seeding as suggested by the writer of the paper.

TATIARA (Average annual rainfall, 19in.).

October 18th.—Present: 10 members.

POWER FARMING.—A paper, "Tractor *versus* Horses," which had been contributed at the Annual Congress was read by Mr. A. E. Milne. In the discussion that followed Mr. J. Elliott, who had had practical experience with the tractor, said he had found it very disappointing, the cost of working the land ranging from 2s. 6d. to 16s. per acre, while the breakages and delays were most aggravating. He had reverted to horses with a sense of great relief. Mr. J. Warneken had watched the working of a tractor in his neighborhood, and had not been favourably impressed with results obtained. While it was claimed that horses were subject to many ailments, he considered the ailments of the tractor were much more serious. Mr. A. E. Milne had seen the tractor at work at Roseworthy College, and considered that it worked satisfactorily. Mr. H. G. Fisher considered that tractors were still under test. He had hopes that they would be satisfactorily developed, but thought for working fallow after rain they would not answer as well as horses. He considered that to calculate annual depreciation at 10 per cent. equally for horses and machinery was not sound; horses did not

depreciate at the same rate as machinery. He thought it would be wise for the Government to carry out tractor trials on experimental farms. Mr. Thos. Hill thought that the success or otherwise of tractors was largely accounted for by the difference in soil. A strong argument in favor of horses was that they would increase in value through progeny. In calculating the cost of wages he pointed out that a farmer's expenses were generally charged to either care of horses or tractor, whereas a considerable part of his time was occupied in other duties.

ALLANDALE EAST, October 10th.—Mr. J. Senart read a paper in which he gave an account of a visit to the Roseworthy Agricultural College. He also tendered a report of the proceedings of the 1924 Annual Congress.

LUCINDALE, October 4th.—The Hon. Secretary (Mr. W. O. Smith), read a paper, "Power Farming". The subjects, "Top Dressing", "Insect Pests", "Subterranean Clover", and "Poultry on the Farm" were brought before the meeting, and an instructive discussion followed.

WIRREGA, September 20th.—Mr. H. Exton read a short paper, "Fodders," in which he made reference to useful fodder plants which were found in scrub country; those which had come under his notice being:—Evening Primrose, Lady Thistle (or True Dandelion), and Yorkshire Fog. The speaker stated that he had planted a small area of Subterranean clover, and that it was making better growth than any other clover on the property.

Two a Month

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All communications to be addressed:

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T. BUTTERFIELD,

Minister of Agriculture.

POINTS FOR PRODUCERS.

Blowfly Pest.

"The best way to combat the blowfly pest," says Government Veterinary Officer A. H. Robin, B.V.Sc., in reply to a correspondent, "is to prevent their breeding as much as possible by effectively destroying (by burning or burying in quicklime) all carcasses, and keeping garbage pits and bins covered or sprinkled with chlorinated lime. Fly traps could be set about the place to catch as many of the flies as possible. A very serviceable trap could be made out of a petrol tin and some fly wire. The end of a petrol tin should be cut out and the opening covered with a piece of fly wire. In the centre should be fixed a cone of the fly wire so that the apex points down into the tin. The base of the cone should be about 3in. or 4in. in diameter and the opening at the apex about ½in., or just large enough for a fly to get through into the tin. In the tin put a piece of strong smelling, rotten meat as a bait, and almost cover it with water. The smell of the bait will attract the fly through the opening in the cone of the fly wire into the tin and it will be unable to get out again, so that it will shortly through exhaustion fall into the water and be drowned. These traps are being used in many places with good results."

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INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

[Replies supplied by MR. ALAN H. ROBIN, B.V.Sc., Veterinary Officer, Stock and Brands Department.]

"A. J. G.," Second Valley, reports horse continually biting its fetlocks.

Reply—Examination of the fetlock would determine the presence or absence of greasy heels. It is probably a case of mange of the legs. Clipping the hair short and applying with an old scrubbing brush hot soap water with lysol added, rubbing it well in a few times daily at intervals, will usually effect a cure, when assisted by a purgative dose of medicine and two tablespoonfuls of Fowler's solution of arsenic in feed for a fortnight.

"H. J. C.," Farrell's Flat, has cow due to calve two months hence. Blood is coming from one of the teats, and there appears to be a lump in the teat.

Reply—You must be particularly gentle and clean in milking the cow. Keep the udder and hands thoroughly clean, otherwise the condition is likely to extend and get worse. With this careful handling the condition of the blood in the milk should gradually subside, though the lumps may persist. If they become bigger and tend to interfere with the flow of milk down the teat duct, you would have to consult a qualified private veterinary surgeon, who might be able to remove them by operation.

"R. G. P.," McLachlan, has mare with growth about 2in. up the near side nostril.

Reply—The growth is probably a simple polypus, which could, with a little care, be cut off at the base with a clean, sharp pair of scissors, and the wound surface left cauterised with a little silver nitrate stick. A safe, simple method of dealing with it, if you can manipulate it, would be to tie a light silk ligature round the base of the growth which in a few days should then, if the ligature is tight enough, drop off without any resulting haemorrhage.

"H. A. M.," North Bore, reports several horses with tucked up appearance, and discharge from nostrils.

Reply—The horses appear to be affected with nasal catarrh. All affected horses should, if possible, be kept isolated from the healthy animals, and not allowed to drink out of the same trough. Keep the nostrils wiped out occasionally with a piece of clean rag. Steaming the heads would be helpful if done repeatedly. The following powders given night and morning, one to each horse, are beneficial:—Powdered gentian root, $\frac{1}{2}$ oz.; pot. nitras, 1 dram; mag. sulph.,

loz. The powders may be mixed in water, and given as a drench, or conveniently given by mixing up in a spoonful of treacle or honey to make a sticky paste which is then smeared over horse's tongue and back teeth so that it licks it down. Supply green feed if available.

"A. N.," Victor Harbor, has pig three weeks old lost power to use hind legs, otherwise in good condition.

Reply—The young sucker appears to be suffering from ricketts, and you should closely watch the rest of the litter for any extension of similar trouble to the others. Give the sucker a tablespoonful of cod liver oil daily, night and morning. You do not say how you are feeding the sow, so I can offer no suggestion to improve matters in that respect, save that you should put about a teaspoonful of calcium phosphate in her feed daily. Also see that she gets plenty of exercise, preferably at grazing.

"W. A. W.," Renmark, reports horse, nine years old, losing condition. Has nasal discharge, scours, and cough, and is easily tired.

Reply—The horse is suffering from a chronic indigestion. Prepare him by giving bran mash, and give the following physic ball:—Aloes, 5 drams; calomel, 1 dram; nux vomica, 1 dram; or give raw linseed oil, 1½ pints; turpentine, 2ozs. The former is preferable. Subsequently give a handful of Epsom salts night and morning in a damped feed for a week or 10 days. Put 1oz. of Fowler's solution daily in the feed or drinking water (if you can water from a bucket) for a fortnight, stop for a fortnight, and repeat again for the same period. Feed on good, nourishing feed, with green feed as part of the ration if available.

"C. R.," Maitland, has horses continually stamping feet on the ground. Animals bite their feet.

Reply—The horses are affected with mange on the legs. The hair should first be clipped as short as possible from the heels to the hocks. Then give the legs a good scrubbing with warm soapy water with a little disinfectant, such as lysol, added. Rub it well in with an old scrubbing brush or body brush. A few daily applications of this should be sufficient to effect a cure. In addition, give the horses two tablespoonfuls of Fowler's solution of arsenic in the feed daily for a fortnight.

"H. B. S.," Kybybolite, has pig nine months old weak in hind legs, stamps feet whilst feeding, and has difficulty in rising.

Reply—The animal is probably suffering from ricketts, due to deficiency of mineral salts in the feed. A suitable ration would be composed of barley, skim milk, and a little meat meal added. Give the pig in addition three tablespoonfuls of cod liver oil daily for a few days, stop for two or three days, and repeat again.

"C. D. K.," Allandale East reports:—(1) Pony stiff in front feet. Has been spelled for four months, but feet do not improve; (2) calf 6 months old, hand reared, swollen and stiff forelegs; (3) draught mare swollen under belly and stiff in hindquarters.

Reply—(1) This is probably a case of founder in the feet, which has now become chronic through lack of suitable treatment in early stages. The condition is likely to persist now. Suitable shoeing by a qualified blacksmith might improve his action. (2) The calf is probably ricketty. Feed on skim milk and feed of good quality, adding a little steamed oats to the feed. Give a tablespoonful of ground sweet bonemeal daily in the feed. (3) Give the horse the following physic ball:—Aloes, 5 drams; calomel, 1 dram; powdered nux vomica, 1 dram. After the physic has worked off give a handful of Epsom salts daily in damped feed. Feed liberally on good feed, with green feed as part of ration. Give one of the following powders twice daily for a fortnight:—Powdered nux vomica, 1 dram; ferri sulphate, 1 dram; powdered gentian root, 2 drams. Mix the powder in a spoonful of treacle to make a sticky paste, and smear on animal's back teeth and tongue.

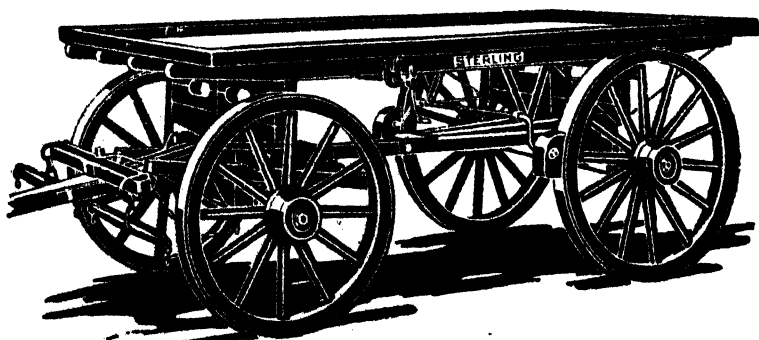
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SECOND PROGRESS REPORT CONCERNING ATTEMPTED RECLAMATION OF SALT IM- PREGNATED AREAS OF THE BERRI STATE EXPERIMENTAL ORCHARD.

[By ARTHUR J. PERKINS, Director of Agriculture.]

INTRODUCTORY.

Towards the latter half of 1922 operations were started with the object of reclaiming heavily impregnated salt areas situated on a hill slope forming part of the Berri State Experimental Orchard. A First Progress Report bearing on these operations was published in the November, 1923, issue of the *Journal of Agriculture* and subsequently reprinted as a separate bulletin.

In 1911, when irrigation operations were inaugurated, salt first showed up as a small more or less inconspicuous patch, which subsequently expanded gradually, and by August, 1922, from 4 acres to 5 acres of Smyrna figs and oranges had been destroyed. It is at this stage that a complete system of under-drains was planned and laid down, full details concerning which have been given in the First Progress Report. As soon as the drains were laid, attempts were made to flood the salt impregnated area whenever irrigation opportunities permitted. In addition, from time to time, both summer and winter crops have been sown on this area with a view to following the progressive improvement of surface conditions.

It is satisfactory to be able to report at this stage that the effect of drainage operations was immediate in checking the further extension of the salt area, and that trees situated on the extreme edge of the area, which were affected by salt and dying off, showed signs of recovery in the first season.

WORK OF THE DRAINS.

On a rough estimate, the salt impregnated area, including two minor patches of recent development, contained in August, 1922, from 50 tons to 60 tons of soluble salts, the great bulk of which are injurious to vegetation when in suitable state of concentration. In the course of time, as the result of flooding operations, the bulk of these salts will enter into solution and be removed from the soil by the under-drains. When the work has been completed it is anticipated that the present barren area may be safely replanted.

Since the inception of the scheme a careful daily record of the waters evacuated by the drains has been kept, and the drainage waters themselves have been analysed from time to time, with a view to ascertaining the amount of salt removed from the soil. The results hitherto secured may be summarised as follows:—

Between November, 1922, and October, 1924, the drains evacuated 761,517 galls. of water. The results of the analysis of the waters are available to the end of April, 1924, only, over which period the drains

evacuated 592,517galls., carrying away with them 26,999lbs. of salts, or over 12 tons. On the other hand, if we assume an equivalent degree of salinity for waters evacuated between April and November, the amount of salt removed from the soil in 24 months should prove in excess of 15 tons. In this connection it must be pointed out that, as the drainage system was not completed until the end of the 1922-23 irrigation season, the removal of salt was not as considerable in the first six months as it proved later on, and as it will continue to prove in the future.

DIFFICULTIES THAT HAVE BEEN MET WITH.

It should be observed here that the relatively steep slope of the area we are seeking to reclaim—about 44in. to the chain in one direction and about 20in. in another—coupled with the loose, sandy nature of the soil, have offered serious obstacles to the effectiveness of flooding operations. Check banks and leading furrows have been availed of freely. On the whole, however, the results of the leaching operations have not been as satisfactory as could have been wished. The tendency of the surplus water is to pass rapidly in a downward direction through the open porous soil as if the latter were a sieve; hence there is little time for lateral displacement of the water and for adequate absorption of saline matter. This aspect of the work is given graphic illustration in the accompanying graphs.

The lower graph represents a daily record of the water evacuated by the drainage system over a period of 12 months, namely, from May 1st, 1923, to April 30th, 1924. Similarly, the upper graph represents the corresponding daily quantities of salt removed by these drainage waters over the same period of time. Data concerning the rainfall and irrigation are also indicated on the lower graph. It is to be observed that each graph corresponds exactly to the other day by day.

It should be noted in the first place that the left side of the graphs corresponding to the May 1st to October 9th, 1923, period represents that portion of the year when no irrigation water was available, and, consequently, when no flooding operations could be carried out. It follows that water passing through the drains during this period was the immediate consequence of rain and not of flooding operations. The drains ceased to flow on August 29th and did not resume work until October 10th, the day after the starting of the first irrigation. This interval of quiescence—42 days—was not, however, rainless; there were indeed eight rainy days, aggregating about 1in., no portion of which, however, found its way into the drainage system. This goes to prove that by September the soil temperature is sufficiently high to bring about the evaporation of moisture, which at cooler periods of the year finds its way into the depths of the subsoil.

Actually, the amount of water passing through the drains between May 1st and October 9th was represented by 57,473galls., and the corresponding quantity of salt removed in solution by 4,228lbs. This gives a mean salinity for the winter drainage waters—the consequence of rain and not of flooding operations—of 73.57lbs. to 1,000galls. of drainage water.

The right side of the graphs on the other hand, covering the period between October 9th, 1923, and April 30th, 1924, represents the irrigation period during which flooding operations were brought into play. It will be observed that there were four irrigations over this period, namely:—

Between October 10th and 12th, inclusively.

Between November 20th and 23rd, inclusively.

Between January 20th and 23rd, inclusively.

Between February 19th and 22nd, inclusively.

The total amount of water evacuated by the drains between October 10th, 1923, and April 30th, 1924, was represented by 373,027galls. of water, carrying with it 13,928lbs. of salt. This represents a mean salinity of 37.34lbs. to the 1,000galls. of water as against 73.57lbs., which represents the mean salinity of the winter drainage waters.

A glance at the graphs will serve to emphasise these facts. If we take the maximum daily winter flow of 4,800galls. secured on July 2nd, we find it represented on the graph by a height of 4.8 divisions, the corresponding amount of salt removed on this day is 348lbs., which on the scale adopted is represented by 3.48 divisions. Hence, the relation between the two is as 4.8 to 3.48, or as 1 is to 0.73.

If, on the other hand, we take the maximum daily summer flow of the drains, namely, 18,090galls., registered on January 23rd, we find it represented on the graph by 18.09 divisions. The corresponding amount of salt removed on this day was 661lbs., and is represented by 6.61 divisions of the scale. Hence, again, the relation between the two is as 18.09 is to 6.61, or as 1 is to 0.37 as against 1 to 0.73 for winter drainage waters. In other words, 1gall. of water passing through the drains as the result of winter rains is practically as effective as 2galls. of water resulting from summer irrigation.

The long, narrow graphs characteristic of summer irrigation drainage indicate how rapidly in this loose, light soil the water passes through it. Hence, with the concurrence of Messrs. Quinn and Savage, I have come to the conclusion that water applied to this area by means of sprinklers would be far more effective for leaching purposes than our attempts to flood a steep, loose and open soil. A Nunan system has, therefore, been established for the purpose, and I hope to be able to report on results in next year's report.

Another difficulty we have met with is the refusal of water to penetrate portion of the soil, notwithstanding its open, loose nature. Some years ago a somewhat similar case was submitted to Dr. Hargreaves, who reported that in his opinion the non-wetting of the soil was attributable to the presence of finely divided organic matter which prevented the water film from coming in contact with the body of the soil. Further investigations in this direction are in hand.

In some instances, too, irregularities in the clay contours had been overlooked, with the result that water had been held up which normally should have passed into the drains. These defects are being remedied.

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MONTHLY STATEMENT OF WATER AND TOTAL SALTS PASSING THROUGH THE DRAINS.

I have summarised below in Table I. the amount of water and total salts that have been evacuated by the drains, month by month, since the inception of the scheme. In the last column the mean salinity of the waters, i.e., the quantity of total salts to 1,000galls. has also been shown.

TABLE I.—*Showing Water and Total Salts Evacuated by Hillside Drainage Scheme between November, 1922, and November, 1924, Inclusively.*

	Drainage. Waters.	Total. Salts.	Mean Salinity, i.e., Salts per 1,000galls.
1922—	Galls.	Lbs.	Lbs.
November	23,307	734	31.5
December	57,107	3,404	59.6
1923—			
January	12,817	918	71.9
February	41,323	2,740	66.3
March	7,863	649	82.7
April	19,600	392	20.0
May	7,098	250	35.2
June	19,085	1,548	81.2
July	25,800	1,949	75.5
August	5,490	481	87.6
September	—	—	—
October	72,528	2,371	32.7
November	62,161	2,589	41.7
December	44,591	1,845	41.4
1924—			
January	75,709	2,890	38.2
February	83,538	2,964	35.5
March	30,924	1,116	36.1
April	3,576	153	42.8
Total	592,517	26,992	45.6
May	22,809	—	—
June	3,216	—	—
July	—	—	—
August	—	—	—
September	94,983	—	—
October	47,992	—	—
Grand Total	761,517	—	—

It has already been pointed out that the drainage system had not been completed until the end of the 1922-23 season, and it follows that the drains did not run to their full capacity until the winter months of 1923. The high degree of salinity of the drainage waters collected during these months has already been commented upon. A comparison between them and corresponding months in 1924 is not at present possible as analytical data concerning the latter are not yet available. The relatively low salinity of drainage waters collected between October, 1923, and March, 1924, inclusively, suggests that the influence of drainage operations is beginning to be felt, and that

as time goes on drainage waters will tend to become less and less saline. An absolute expression of opinion on the subject at the present juncture is not, however, advisable.

COMPOSITION OF DRAINAGE SALTS.

The total quantity of salts evacuated between November 1922, and April, 1924, inclusively, has already been stated to be 26,993lbs. The nature and quantities of the salts forming this total have been indicated below in Table II.

TABLE II.—*Showing Nature and Quantities of Salts Evacuated by Hillside Drainage Scheme between November, 1922, and April, 1924, inclusively.*

Salts present.	Common Names.	Quantities.	Percentage.
		Lbs.	%
Calcium carbonate	Lime	692	2.6
Magnesium carbonate	—	2,078	7.7
Sodium carbonate	Black alkali	3,157	11.7
Sodium sulphate	Glauber's salt	7,327	27.1
Sodium chloride	Common salt	13,000	48.2
Undetermined	—	739	2.7
Totals		26,993	100.0

Of these salts, those usually injurious to vegetation are common salt, Glauber's salt and black alkali, which represent 87 per cent. of the aggregate removed from the soil. The dominant salt is common salt, represented by about one-half of the total, followed by Glauber's salt, represented by about one-quarter, and black alkali by about one-eighth.

The presence of carbonate of soda, or black alkali, was unsuspected by us prior to drainage operations. The open porous nature of the upper layers of soil had inhibited the usual surface indications; and there is no reason to believe that this dangerous salt is likely in the future to modify injuriously the mechanical condition of this light soil. It is to be observed that relatively to total salts, the proportion of black alkali present in drainage waters appears to be on the increase since drainage operations were started. Between November, 1922, and August, 1923 (inclusively), black alkali represented about 7 per cent. of the salts conveyed by the drainage waters. On the other hand, between September, 1923, and April, 1924, this percentage had risen to 16.3, i.e., more than doubled. It is probable that the more readily soluble salts, such as common salt, tend to appear most abundantly in earlier leaching operations. Later on less soluble salts, such as sodium carbonate, tend to displace them in gradually increasing proportions.

II.—RECLAMATION OF LEVEL FLAT AREA ADJOINING THE RIVER AFFECTED BY SEEPAGE AND SALT.

The Berri Experimental Orchard consists of a gently sloping hillside, which gradually connects up with a level flat immediately adjoining the River. It follows that this level flat is the natural outlet for surplus irrigation waters, applied to the higher levels. The

latter work down vertically through the open porous soil until they reach the more or less impermeable clay layers; here they may be held up in pockets as has happened on the hillside salt patch, or when the contours of the subsoil clay permit of it, they gradually work their way down to the lower levels of the flat, where they give rise to salt and seepage troubles. The bulk of the level flat under consideration was originally sweet, and had been planted to vines and fruit-trees, mostly prunes. The influence of the seepage waters has, however, made itself felt within recent years, and both trees and vines have suffered, and in places died out over an area approximating $3\frac{1}{2}$ acres. In the 1923-24 season, after a careful survey of the area affected, a complete system of pipe-drains was laid down, details concerning which are indicated on the attached plans.

The affected area is a long irregular-shaped patch about 12 chains by 2 chains, lying at right angles to the natural gradient of the adjoining hill. We have laid down two lines of drains running more or less parallel to the length of the affected area, and hence at right angles to the line of fall and of that of ingress of the seepage waters. Each line has an independent outlet into the River. Pipe Track No. 1 (*vide* plans), which is nearest to the hill slope will, it is anticipated, intercept the bulk of the down flowing seepage waters; whilst Pipe Track No. 2 will take what escapes and deal mainly with existing waters. If found necessary, a subsidiary drain, emptying into Pipe Track II., shown in broken lines on the plan, will be added at a later date.

Pipe Track No. 1.—This line of pipes is 865ft. in length, divided into three sections by intervening observation pits. The first section consists of a double line of 2in. drains emptying into observation pit No. 3. The mean fall given to these pipes is 3in. to the chain. In this section the pipes have been placed in contact with the clay at a depth of about 4ft. beneath the surface. This section has a length of 294ft.

The second section extending between observation pits No. 3 and No. 2 has also a length of 294ft. It consists of 3in. pipes, set at a mean fall of 3in. to the chain, from 4ft. 8in. to 5ft. beneath the surface. The relative flatness of the area has compelled us to imbed this line of pipes well into the subsoil clay. In order to facilitate percolation the pipes have been overlaid with coarse limestone rubble.

The third section extends between observation pits 2 and 1. It consists of a line of 4in. pipes, set at a mean fall of 6in. to the chain and is 270ft. in length: The pipes which are from 3ft. 3in. to 5ft. 6in. below the surface are again well embedded in the subsoil clay.

From observation pit No. 1 issues a short length of outlet pipes which go beyond the orchard boundary and empty the drainage waters into the river.

Pipe Track No. 1 was laid down between December 10th, 1923, and March 7th, 1924. The drain pipes began to flow on the 3rd January, 1924, and have maintained a continuous flow ever since; the bulk of the water coming from the area situated between observation pits 1 and 2.

Pipe Track No. 2.—Pipe Track No. 2 was started on the 5th May, 1924, and completed on the 12th of August. First flow of drainage waters was noted on the 8th of August. This line of pipes has a length of 1,256ft. split up into four sections by intervening observation pits. The fall of the pipes throughout Pipe Track No. 2 is uniformly 3in. to the chain, and all pipes are unavoidably embedded in the subsoil clay.

The first section on the upstream end consists of a double line of 2in. pipes 300ft. in length: the pipes are 4ft. 9in. to 5ft. below the surface.

The second section, extending between observation pits 4 and 5 is 298ft. in length, with 3in. pipes 4ft. 10in. to 5ft. 2in. below the surface.

The third section, extending between observation pits 5 and 6, is also 298ft. in length with 4in. pipes 5ft. to 6ft. below the surface.

The last section, discharging ultimately into the River is 360ft. in length with 4in. pipes 3ft. 9in. to 6ft. beneath the surface.

OBSERVATION PITS.

The observation pits, 2ft. 6in. by 1ft. 6in., and of varying depths, have been constructed of 3in. cement concrete on Pipe Track No. 1 and of red gum planks on Pipe Track No. 2.

WORKING OF THE DRAINS.

Since Pipe Track No. 1 was not completed until the 7th March of the present year, and Pipe Track No. 2 on the 12th of August, this drainage scheme cannot yet be expected to show striking results; and accordingly the Manager reports that as yet there is no visible improvement in the drainage area.

As a matter of fact, the problem confronting us on this level piece of ground is quite other from that dealt with on the sandy higher levels. Here, as I shall have occasion to show later, we have a stiff compact soil comparatively free of injurious salts in its native state, into which over the course of 13 years of irrigation the surplus drainage waters of the higher levels have gradually been accumulating. Hence, the affected area, and to some extent adjoining areas, are more or less saturated with saline seepage water, which it is the function of the drains to remove. But in soil of this character percolation is naturally slow, and during periods of irrigation new water is constantly reaching this area, both as the result of its own treatment and of the downward flow from the upper levels. It follows that the complete removal of the surplus seepage water will probably be a more or less slow process.

In support of this view, it may be pointed out that the flow from Pipe Track No. 1 has been continuous since January, 1924, both through winter and summer months, whereas on the hillside the drains were active only during irrigation periods, or subsequently to heavy rains. A comparison of the outflow from these two systems will not be without interest, and has been summarised in Table III.

TABLE III.—*Comparison of Outflow of Drains of Level Flat Area with that of Hillside Drains.*

	Level Flat Drains. (865ft. of pipes to August, 2,121ft. of pipes from August).		Hillside Drains (4,150ft. of pipes).	
	Drainage Waters. Per Day and per 100ft. of Pipes.	Total Galls.	Drainage Waters. Per Day and per 100ft. of Pipes.	Total Galls.
1924—				
January	69	18,480	59	75,709
February	228	57,240	69	83,538
March	89	23,905	24	30,924
April	105	27,228	3	3,576
May	42	11,148	18	22,809
June	44	11,424	3	3,216
July	15	9,924	—	—
August	54	35,494	—	—
September	114	72,264	76	94,983
October	90	59,136	37	47,992
Totals	86	326,243	29	362,747

It will be observed in the first place that notwithstanding the fact that close on two-thirds of the level flat system has been in operation since August only, over the 10 months under consideration the outflow from the hillside was 36,500galls. only in excess of that of the level flat drainage system. On the other hand, if we take into consideration the relative lengths of the two systems, we note that from the point of view of actual outflow per 100ft. of piping, the level flat system has proved three times as effective as the hillside system, namely, 86galls. per diem against 29galls. This is accounted for partly in that on the flat drainage was continuous throughout this period, whereas it was suspended on the hillside for approximately two and a half months owing to the paucity of winter rains.

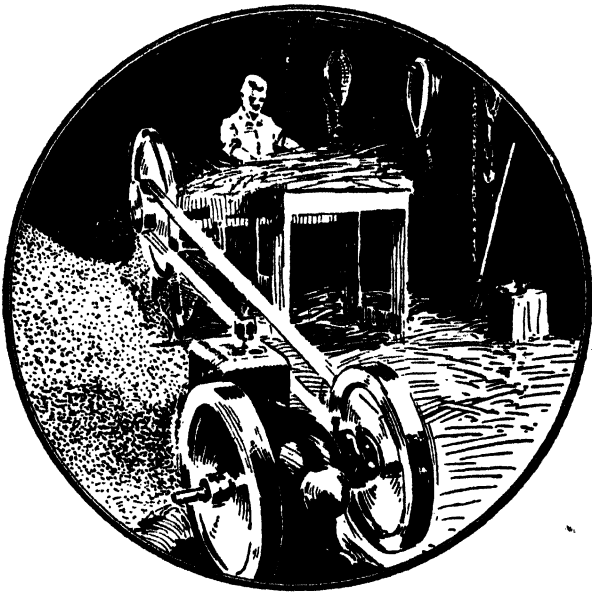
Hence, we are justified in concluding that although the process may be slow, the drainage system will ultimately remove the bulk of the seepage waters which are at present damaging the growth of fruit trees and vines.

SALTS REMOVED FROM THE SOIL BY LEVEL FLAT DRAINAGE SCHEME.

Analytical data concerning these drainage waters are available for the months of January, February, and March only. They have been summarised below in Table IV.

TABLE IV.—*Showing Total Salts Removed by Level Flat Drainage Scheme, January, 1924, to March, 1924, inclusively.*

Months.	Drainage Water. Galls.	Total Salts. Lbs.	Mean Salinity, i.e., Salts to 1,000galls.
			Lbs.
January	18,480	240	12.5
February	57,240	760	13.3
March	23,905	289	12.1
Totals	99,625	1,289	12.8



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It will be observed that in three months the drainage system evacuated 99,625galls., carrying with them 1,289lbs. of salts. If we assume the mean salinity of the waters to continue approximately the same, the 326,243galls. evacuated to the end of October will have removed 4,188lbs., or approximately 1 ton 17½cwts.

We may note, too, that these drainage waters are far less impregnated with salt than those of the hillside scheme, 12.8lbs. to the 1,000galls. as against 45.6lbs. It is to be inferred, therefore, that a rise in the clay contours of the hillside has hitherto prevented the drainage waters of the hillside salt patch from reaching the lower levels.

This means salinity of the level flat drainage area—12.8lbs. to the 1,000galls., or 89.6 grains to the gallon—is by no means excessive, even from the point of view of irrigation water if applied to soil the natural drainage of which is good, and it is to be inferred that the chief defect of this area of land is waterlogging rather than the presence of excessive salt. Nevertheless, the fine grained nature of this soil is such that during the hot summer months, under the call of surface evaporation, salt tends to accumulate in the surface layers and to cause injury to plant roots that happen to come in contact with it.

NATURE AND PROPORTION OF THE SALTS PRESENT.

In Table V. below is shown the composition of the saline matter present in the drainage waters of the level flat drainage scheme.

TABLE V.—*Showing Mean Composition of Saline Matter Present in Drainage Water.*

Salts Present.	Common Names.	Quantities.	Percentage.
		Lbs.	%
Calcium carbonate	Lime	90	7.0
Magnesium carbonate	—	56	4.4
Sodium carbonate	Black alkali	514	40.2
Sodium sulphate	Glauber's salt	156	12.2
Sodium chloride	Common salt	429	33.5
Undetermined	—	35	2.7
Total		1,280	100.0

The most disquieting feature in the above data is the fact that black alkali (carbonate of soda) is the predominating salt present, forming 40.2 per cent of the total salts present. This salt, always dangerous to vegetation, is particularly so in a relatively heavy soil such as one under consideration. It is usually combatted by means of dressings of gypsum. In the meanwhile it is satisfactory to note that it appears to be passing fairly freely into the drainage waters. The next salt in order of importance is common salt, representing about one-third of the total salts present, and the next one (Glauber's salt) representing 12 per cent.

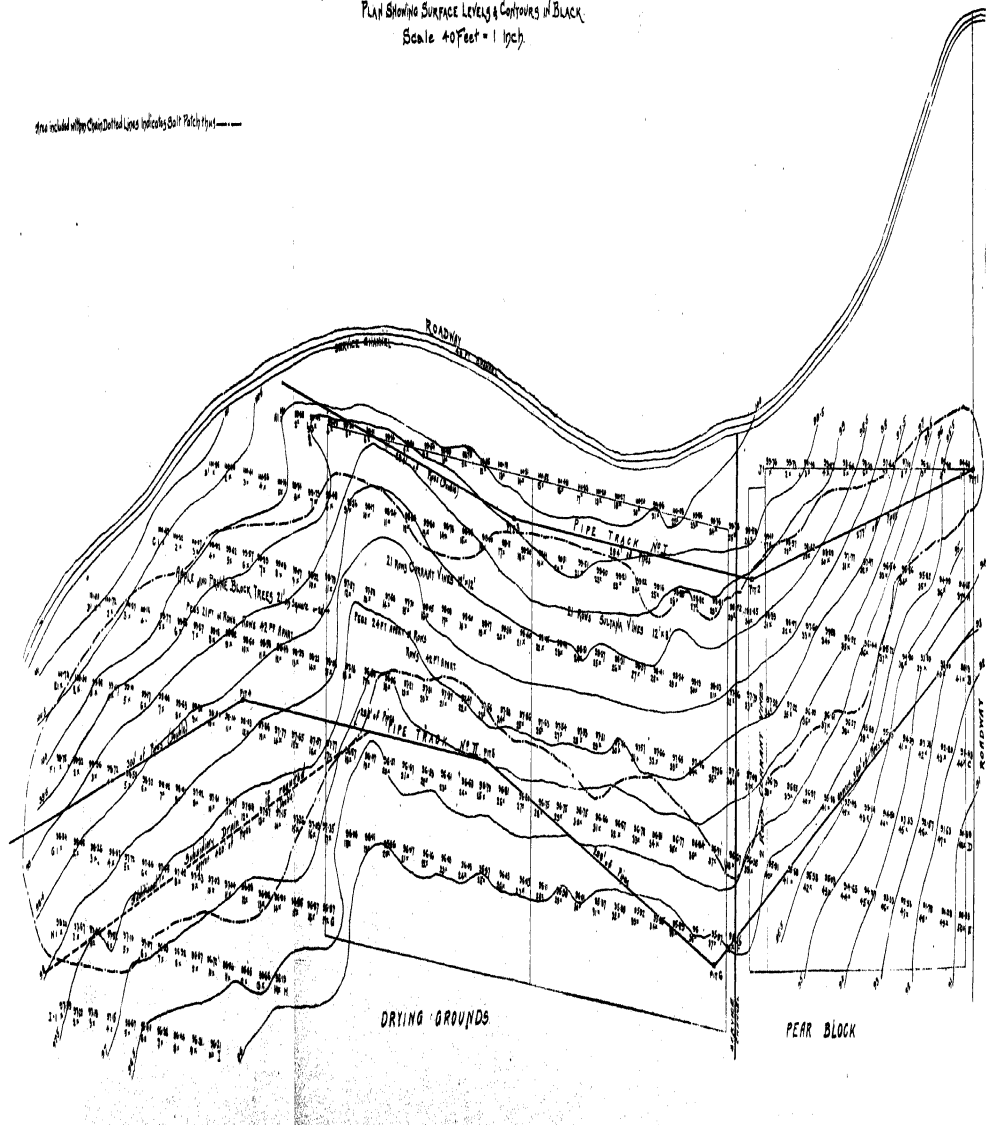
BERRI EXPERIMENTAL ORCHARD

SALT PATCH BELOW 40' CHANNEL OF BLOCKS F & G in 1923

Plant Growing Surface Level & Contours in Black

Scale 40 Feet = 1 Inch

Area included within Chain-Dotted Lines indicates Salt Patch Area



ANALYSIS OF SOIL PRIOR TO RECLAMATION OPERATIONS.

Prior to laying down the drain pipes, it was thought advisable to determine the amounts of salts present in the soil at various depths to the subsoil clay. Accordingly, soil samples were taken in both the salt affected area and the adjoining sweet land as follows:—

1. Sample A 7, adjoining the salt area, but on a higher level above it.
2. Sample C 41, adjoining the salt area, but on a lower level below it.
- 3 and 4. Samples D 34 and E 12, within the salt area.

Soil Sample A 7.—This sample of soil was taken from a spot 24ft. north of peg A 7 (*vide* plan) well out of the salt affected area and situated on a slightly higher level. Analytical data have been summarised below, foot by foot, in Table VI.

TABLE VI.—*Showing Soluble Salts Present in Sweet Land above Salt Patch of Level Flat Early in 1924.*

	1st ft.	2nd ft.	3rd ft.	4th ft.	Last 9in.	Total in 4ft. 9in.	Percent- age in 4ft. 9in.
	Lbs. per Acre.						
Calcium carbonate . . .	52	106	40	40	24	262	0.002
Magnesium carbonate . .	28	29	58	33	56	204	0.001
Sodium carbonate . . .	4	—	84	65	84	237	0.002
Sodium nitrate	59	—	—	—	—	59	—
Magnesium sulphate . . .	11	47	—	—	—	58	—
Sodium sulphate	138	195	162	206	157	858	0.006
Sodium chloride	90	133	218	165	186	792	0.005
Undetermined	13	9	17	16	31	86	0.001
Totals	395	519	579	525	538	2,556	0.017
Percentages in feet con- cerned	0.012	0.016	0.018	0.016	0.022	—	—

Although this soil shows as much as 2,556lbs. of soluble salts to the acre, in present circumstances the latter may be considered innocuous, since they are distributed through 4ft. 9in. of soil, in no portion of which is concentration dangerous. But even were the whole of the common salt, Glauber's salt, and black alkali concentrated in the first foot of soil, their combined efforts would only give a concentration of about 0.05 per cent, which would be more or less harmless.

Soil Sample C 41.—This sample of soil was also taken from soil that is at present considered sweet. It is, however, situated on a lower level below the present salt patch at a spot where the subsoil clay contours fall rather steeply and appear to offer good natural drainage conditions (*vide* map showing clay subsoil contours). Analytical data bearing on soluble salts present have been summarised below in Table VII.

TABLE VII.—*Showing Soluble Salt Present in Sweet Land Below Salt Patch of Level Flat Early in 1924.*

	1st foot lbs. per acre.	Percentage.
Calcium carbonate	92	0.003
Magnesium carbonate	21	0.001
Sodium carbonate	66	0.002
Calcium sulphate	19	0.001
Magnesium sulphate	35	0.001
Sodium sulphate	303	0.009
Sodium chloride	174	0.005
Undetermined	74	0.002
Totals	784	0.024

Here, although the subsoil clay is within 1ft. of the surface, the soil shows only slight traces of injurious salts, owing to good natural drainage conditions brought about by the fall in adjacent subsoil clay contours.

We may infer from an examination of analytical data of these two samples of soil from spots adjacent to, but definitely outside the present salt patch, that originally all this area was sufficiently sweet for plant growth. It remains to be considered what has been the effect of the introduction of saline seepage waters from the higher levels.

Soil Sample D 34.—This sample was taken towards the south-eastern end of the salt-affected area, where the clay contours show a tendency to flatten out. Analytical data are summarised below in Table VIII.

TABLE VIII.—*Showing Soluble Salts Present in Salt-affected Area in Neighborhood of Peg D 34 Early in 1924.*

	1st ft.	2nd ft.	3rd ft.	Total in 3ft.	Percentage in 3ft.
	lbs. per acre.				
Calcium carbonate	225	177	55	457	0.005
Magnesium carbonate	12	88	34	134	0.001
Sodium carbonate	—	232	365	597	0.006
Calcium sulphate	2,065	—	—	2,065	0.021
Magnesium sulphate	696	1	—	697	0.007
Sodium sulphate	2,387	1,091	747	4,225	0.043
Sodium chloride	1,857	594	354	2,805	0.029
Undetermined	310	8	15	333	0.003
Total	7,552	2,191	1,570	11,313	0.116

Percentage in feet

concerned in 0.232 0.067 0.048 — —

This soil, situated within the seepage-affected area, contains 11,313lbs. of soluble salts to the acre distributed over 3ft. of soil. Maximum concentration is in the first foot, namely, 0.232 per cent.—this is the natural consequence of summer surface evaporation. The degree of surface concentration is, however, even greater than the figures given indicate. Analyses have actually been carried out for every 3in. depths of soil. Reference to these data shows 5,362lbs. of soluble salts in the first 3in. of soil, or close on half the salts present

in 3ft. of soil. The principal salt present is Glauber's salt, and the next common salt. The calcium sulphate found present—2,065lbs. to the acre is confined to the surface layers, and is attributable to dressings of gypsum which have been applied from time to time. These dressings will probably account for the comparative insignificance of black alkali, and for the heavy preponderance of Glauber's salt over common salt.

It should be added that the proportion of salts found present, and particularly their state of concentration in the surface layers, is sufficient to account for temporary sterility of the soil. It is hoped that in the course of time drainage operations will tend to rectify matters in this direction.

Soil Sample E 12.—This sample was taken towards the western end of the salt patch in the neighborhood of Peg E 12. Here again clay contour lines indicate absence of appreciable fall. Analytical data are summarised below in Table IX.

TABLE IX.—*Showing Soluble Salts Present in Salt-affected Area in Neighborhood of Peg E 12 Early in 1924.*

	1st ft.	2nd ft.	3rd ft.	Total in 3ft.	Percentage in 3ft.
	lbs. per acre.				
Calcium carbonate . . .	172	129	146	447	0.005
Magnesium carbonate . .	18	31	45	94	0.001
Sodium carbonate . . .	181	79	180	440	0.005
Calcium sulphate	44	—	—	44	—
Magnesium sulphate . . .	77	7	—	84	0.001
Sodium sulphate	1,597	350	416	2,363	0.024
Sodium chloride	1,613	225	236	2,074	0.021
Undetermined	73	20	52	145	0.001
Totals	3,775	841	1,075	5,691	0.058
Percentage in feet concerned in	0.116	0.026	0.033	—	—

This portion of the salt patch is less impregnated with saline matter than the south-eastern end. The total amount of salts to the acre 3ft. deep was represented by 5,691lbs. as against 11,313 lbs. for the south-eastern end.

Again we may note concentration of soluble salts in the surface layers as a natural consequence of summer surface evaporation.

Glauber's salt and common salt are present in about equal proportions, whilst black alkali is only sparsely represented.

DISCREPANCY BETWEEN RESULTS OF ANALYSIS OF DRAINAGE WATERS AND THAT OF DRAINED SOIL.

There is an apparent discrepancy between the results of the analysis of the drainage waters and that of the soil from which these waters are derived.

Thus, if we assume the salts present in the seepage-affected area to be represented by a mean of the results secured at Pegs D 34 and

E 12, we have the following figures and proportions per acre in a depth of 3ft. :—

	Lbs. per acre.	Per cent.
Sodium sulphate	3,294	38.8
Sodium chloride	2,439	28.7
Calcium sulphate	1,054	12.4
Sodium carbonate	519	6.1
Calcium carbonate	452	5.3
Magnesium sulphate	391	4.6
Magnesium carbonate	114	1.3
Undetermined	239	2.8
Totals	8,502	100.0

Thus, taking the principal salts that concern us, sodium sulphate is in the lead, representing about two-fifths of the soluble salts present; sodium chloride comes next, representing about three-tenths, and then sodium carbonate, representing no more than one-sixteenth.

On the other hand, in the drainage waters, the proportions are curiously reversed, namely, two-fifths representing sodium carbonate, one-third sodium chloride, and one-eighth Glauber's salt.

It is difficult to account for the position, particularly as sodium chloride and sodium sulphate are normally more soluble in water than sodium carbonate. It is, of course, possible that the soil samples analysed may have been accidentally taken from exceptional spots. This, however, does not appear likely, and more probably the seepage waters which are at present passing into the drains are as yet charged mainly with foreign salts from the higher levels, and that at a later date their composition may be affected by actual soil components.

For the present I can do no more than draw attention to the position which will be investigated later on.

ESTIMATE OF TOTAL SALTS TO BE REMOVED.

On a rough estimate, the amount of soluble salts present in these $3\frac{1}{2}$ acres probably does not exceed 15 tons, which is considerably less than the quantity estimated to be present on the hillside salt patch. It should be recollected, however, that on the flat the removal of surplus water is of even greater importance than the removal of salt, which after all must gradually disappear with the water which holds it in solution.

SUMMARY.

I. Hillside Drainage Scheme.

1. The extension of the main salt patch has been checked, and stunted trees on the extreme edges of the patch are showing signs of recovery.

2. On a rough estimate the amount of soluble salts present in the affected area—about five acres—is between 50 to 60 tons.

3. Between November, 1922, and October, 1924, the drains evacuated 761,517 galls. of water, carrying with them 15 tons of soluble salts.

4. The steep slope and sandy nature of the soil of the affected area render flooding operations difficult of application.

5. Relatively to the amount of water evacuated by the drains, winter rains leached the soil more effectively than summer flooding, namely, 73.57lbs. of salt to 1,000galls. of water against 37.34lbs.

6. In consequence of the above fact it has been decided to supersede summer flooding operations by sprinklers, and a Nunan system has been established accordingly. Its effectiveness will be commented upon in next year's report.

7. About 87 per cent. of the soluble salts removed by the drainage waters was represented by common salt (one-half), Glauber's salt (one-quarter), and black alkali (one-eighth).

8. It is not anticipated that black alkali will lead to the usual mechanical soil troubles, owing to the sandy texture of the soil.

9. The proportion of black alkali to total salts removed is tending to increase with the progress of leaching operations.

II. Level Flat Area Drainage Scheme.

10. Seepage trouble, the result of the drainage of surplus irrigation waters from neighboring heights to a level flat adjoining the river, have made themselves felt for some time past at the Berri State Experimental Orchard.

11. In order to combat this trouble, a system of under drains was laid down in the 1923-24 season, the area affected being approximately $3\frac{1}{2}$ acres.

12. The drainage system consists of two lines of pipe drains running more or less at right angles to the line of ingress of the seepage waters. Each line has an independent outlet into the river.

13. This comparatively heavy soil is more or less saturated with seepage water, the result of 13 consecutive years' irrigation of the higher levels. The main problem is the removal of these waters.

14. Although these waters are more or less saline, the salt problem is incidental, and will probably disappear with the removal of the seepage waters.

15. The outflow from drains on this system has been continuous through the winter and summer months, whereas on the hillside there was no flow for 42 days in winter.

16. Over a period of 10 months these drains evacuated 326,243galls. of water, with a mean outflow of 86galls. per day and per 100ft. of pipes. Over the same period the outflow from the hillside drains was only 29galls. per day and 100ft. of pipes. Although percolation is naturally slow in this type of soil, it is believed that the drains will gradually remove the seepage waters.

17. The mean salinity of these drainage waters is considerably less than that of the hillside drains, namely, 12.8lbs. to the 100galls. of water as against 45.6lbs.

18. The amount of salt removed from the land in 10 months is approximately $1\frac{1}{4}$ tons.

19. Analysis of the drainage water shows that two-fifths of the salt removed is black alkali, one-third common salt, and one-eighth Glauber's salt.

20. The relative proportion of these salts is quite different from that of the hillside drainage waters, and it is inferred that drainage

waters from the hillside salt patch have not found their way into the level flat.

21. Soil analysis of land adjacent to the seepage area shows it to be only slightly impregnated with saline matter. It is inferred that prior to the advent of seepage waters the whole of the area was sufficiently sweet for orchard purposes.

22. Soil analyses within the seepage area indicate salt in a state of surface concentration sufficient to bring about temporary sterility and the death of trees and shrubs.

23. The main salt present is apparently Glauber's salt, followed by common salt and small quantities of black alkali. This is probably the result of heavy dressings of gypsum which have led to the decomposition of the black alkali and the formation of Glauber's salt, which admits of ready leaching.

24. The proportions of salts found in drainage waters is not in agreement with those of salts found in the soil. It is provisionally assumed that for the present seepage waters passing into the drains are maintaining their original composition, but may alter in the course of time.

25. On a rough estimate, the soluble salts present in the seepage-affected areas are set down at about 15 tons.

26. Analytical work connected with this inquiry has been conducted in the laboratory of the Director of Chemistry, whilst the supervision of drainage operations and the collection of data has been in the hands of the Manager of the Orchard, Mr. C. G. Savage.

THE AGRICULTURAL OUTLOOK.

REPORTS FOR THE MONTH OF DECEMBER, 1924.

The following reports on the general agricultural condition and outlook of the areas represented by the Government Experimental Farms mentioned below have been prepared by the respective managers:—

Booborowie.—Weather—The weather for December has been varied, a big rain (95 points) on the 14th, a heat wave, and cold weather. One hundred and sixteen points of rain fell for the month, making a total of 2,458 points for the year. Crops—Some of the wheat crops, according to reports, are disappointing; they did not fill properly. Natural feed is very plentiful, and this has been one of the best seasons for feed. Stock—All livestock are in good condition and healthy. Pests—Noxious weeds of several kinds are very numerous owing to the wet summer. Miscellaneous—Farmers are busy reaping, and hay carting is nearly finished.

Turretfield.—Weather—The weather has been cool and dry, only 22 points of rain being registered. Crops—The hay crops in some fields are very heavy, the late rains giving a good finish. The grain crops went off very quickly, and, consequently, the grain is not as plump as it might have been. Natural feed—Feed held out well on the non-arable land, but very little land is left out in this district. Stock are in fair condition. Pests—Starlings and other birds are doing damage in fruit gardens. Miscellaneous—Very little hay could be carted until the grain is reaped, as the crops ripened off quickly.

THE VALUE OF SOME SOUTH AUSTRALIAN OATS AND OTHER FODDERS.

[Paper read before the A.A.A.S., Adelaide, August, 1924, by A. T. JEFFERIS, B.Sc., A.I.C., State Agricultural Chemist, and C. S. PIPER, B.Sc., Assistant Chemist.]

In the growth of cereals here and in Australia generally the question of quality or feeding value has been to a large extent neglected, a variety being valued according to its producing capacity and resistance to weather and disease, irrespective of its quality when produced.

During the last two or three years considerable work has been done in the Laboratory of Roseworthy College in order to discover the feeding value of various local crops, particularly oats, whereby some knowledge might be gained concerning varieties profitable to grow in South Australia in respect to their fattening value, as well as their yield per acre.

Several years ago Mr. Colebatch, Principal of the College, introduced from New South Wales some imported and crossbred oats, in order to ascertain whether it were possible to establish an oat which would compare favorably with varieties hitherto successfully grown here, such as Algerian, with respect to yield in hay and grain, and at the same time develop better foliage during the winter. Such an oat would provide green feed, if required, for stock during the cold months, while if allowed to mature would yield good crops of hay and grain. These oats have been grown in plots alongside each other, for several seasons, and one or two varieties appear to promise the qualities sought.

Though a discussion of the comparative yields is outside the province of the laboratory, the following reports of 1922 and 1923, furnished by Mr. Scott, Experimentalist of the College, will be of interest. It will be seen that Lachlan, a strong winter grower, compared favorably with Algerian for both seasons as a hay and grain producer.

TABLE I.—*Yields per Acre of Oats. Seasons 1922 and 1923.*

	1922. Ensilage.			1923. Ensilage.			1922. Hay			1923. Hay.			1922. Grain.		1923. Grain.	
	T.	C.	L.	T.	C.	L.	T.	C.	L.	T.	C.	L.	B.	L.	B.	L.
Algerian	5	14	32	9	0	40	2	18	64	3	17	16	24	2	29	33
Bathurst Early	5	14	32	—	—	—	2	19	32	—	—	—	17	19	—	—
Glen Innes.....	—	—	—	8	2	56	—	—	—	3	19	62	—	—	26	39
Yarran	5	17	96	9	11	8	3	0	0	4	11	63	27	8	23	37
Early Burt	6	1	48	8	0	80	3	2	16	3	14	82	21	35	26	38
Guyra.....	6	10	0	8	18	64	3	4	32	3	17	16	24	39	30	2
Kherson	6	5	0	7	18	104	3	13	64	3	13	104	28	34	40	38
Lachlan	6	12	6	7	11	88	3	5	80	3	18	84	23	6	30	18
Mulga	5	10	80	7	1	8	2	18	64	3	17	16	22	23	18	13
N.Z. Cape	4	9	32	7	10	0	2	19	32	3	14	82	17	18	24	31
Quondong	5	7	16	9	12	96	2	15	0	4	17	26	20	12	20	0
Sootch Grey ...	4	16	48	9	7	56	2	12	16	4	8	44	23	6	42	29
Starks	5	0	0	—	—	—	2	18	64	—	—	—	15	16	—	—
Kellsall	—	—	—	7	18	104	—	—	—	4	5	20	—	—	20	19
Sunrise	5	14	32	7	4	72	2	17	16	3	6	78	16	27	20	1

TABLE II.—*Showing Monthly Rainfall at Roseworthy College, Seasons 1922 and 1923.*

	1922.	1923.	Mean, 1883-1922.
	In.	In.	In.
January	1.02	0.47	0.80
February	0.08	—	0.60
March.....	0.10	0.02	0.84
April.....	0.90	0.10	1.52
May	3.59	6.01	1.87
June	1.73	5.03	2.56
July	3.75	4.48	1.85
August	2.19	2.42	2.06
September	1.32	4.73	1.81
October	1.40	2.17	1.64
November	0.02	0.36	1.07
December	3.90	1.67	0.88
Totals.....	20.00	27.46	17.51

The rainfall (1) during the two seasons is shown above, and it will be noticed that 1923 was one of the wettest seasons on record, about 25in. falling during the growing season, May to October, whereas in 1922 about 15in. were recorded during those months.

SAMPLING.

The plots were carefully watched and sampled by hand when each had attained the requisite stage.

- (a) Ensilage—Plant green, grain milky.
- (b) Hay—Plant changing color, grain hardening.
- (c) Ripe—Plant yellow, grain fully ripe.

Each sample consisted of some fifty stalks of uniform maturity. In the case of the green plant these were immediately weighed, and the loss of moisture determined after 24 hours in the water oven. The samples were then chaffed, ground to pass a 20 mesh sieve, and exposed to the air for several days before bottling. The ripe plants were stripped, winnowed, and a portion of the grain hulled.

TABLE III.—*Showing Proportion of Straw, Grain and Chaff in Plant.*

Season 1922.	Algerian.	Bath.	Yarran.	Early	Guyra.	Kher.	Lachlan.	Mulga.	N.Z.	Quon-	Scotch	Starks.	Sunrise.
	%	o/o	o/o	o/o	o/o	son.	o/o	o/o	o/o	o/o	o/o	o/o	%
Straw	57.4	68.0	60.6	63.1	56.7	50.1	61.8	70.0	59.0	85.7	64.7	56.8	63.5
Grain	37.8	26.7	34.2	32.6	39.4	44.4	33.1	24.8	36.3	10.0	28.8	37.6	33.0
Chaff	4.8	5.3	5.2	4.3	3.9	5.5	5.1	5.2	4.7	4.3	6.5	5.6	3.5

Season 1923.	Algerian.	Glen	Yarran.	Early	Guyra.	Kher.	Lachlan.	Mulga.	N.Z.	Quon-	Scotch	Kellsall.	Sunrise.
	o/o	Innes.	o/o	o/o	o/o	son.	o/o	o/o	o/o	o/o	o/o	o/o	%
Straw	55.9	59.4	61.7	52.2	60.1	55.6	56.9	52.9	60.0	55.8	53.3	46.9	54.4
Grain	39.8	38.9	34.3	43.4	35.9	40.7	37.6	42.4	36.4	40.4	42.1	49.0	40.8
Chaff	4.3	3.7	4.0	4.4	4.0	3.7	5.5	4.7	3.6	3.8	4.6	4.1	4.8

TABLE IV.—*Showing Average Weight of Grain and Kernel.*

Season 1922.	Algerian.	Bath.	Yarran.	Early	Guyra.	Kher.	Lachlan.	Mulga.	N.Z.	Quon-	Scotch	Starks.	Sunrise.
	grms.	Early.	grms.	grms.	grms.	grms.	grms.	grms.	grms.	grms.	grms.	grms.	grms.
Average weight grain	-0262	-0322	-0347	-0271	-0299	-0212	-0346	-0263	-0252	-0217	-0210	-0262	-0309
Average weight kernel	-0164	-0192	-0229	-0187	-0206	-0145	-0228	-0174	-0164	-0104	-0150	-0175	-0228
Ratio Kernel Grain	o/o	o/o	o/o	o/o	o/o	o/o	o/o	o/o	o/o	o/o	o/o	o/o	o/o
	62.6	61.9	66.0	68.9	68.9	68.5	65.9	66.1	65.1	47.0	71.5	67.2	73.8

Season 1923.	Algerian	Glen	Yarran.	Early	Guyra.	Kher.	Lachlan.	Mulga.	N.Z.	Quon-	Scotch	Kellsall.	Sunrise.
	grms.	Innes.	grms.	grms.	grms.	son.	grms.	grms.	grms.	o/o	o/o	grms.	grms.
Average weight grain	-0345	-0364	-0360	-0284	-0352	-0203	-0388	-0332	-0320	-0355	-0235	-0313	-0355
Average weight kernel	-0238	-0274	-0244	-0207	-0260	-0144	-0266	-0241	-0223	-0260	-0168	-0212	-0262
Ratio Kernel Grain	o/o	o/o	o/o	o/o	o/o	o/o	o/o	o/o	o/o	o/o	o/o	o/o	o/o
	69.0	75.1	67.9	72.8	73.8	70.8	68.3	72.4	69.6	73.3	71.4	67.8	73.7

The great seasonal variation in the distribution of material in the ripe plant may be noticed by reference to Tables III. and IV. For example—Quondong has only 10 per cent. grain in 1922, and 40 per cent. in 1923, while its percentage of kernel in the whole grain rises from 47 to 73. This variety suffered very severely from the hot winds in early October, 1922.

ANALYSES.

Determinations were done in all cases on the air-dry ground samples, which were kept in well-stoppered bottles. For sake of comparison with results obtained elsewhere, a brief resume of the methods adopted is given.

Moisture.—Loss after nine hours in water oven.

Ash.—Two grams of sample incinerated at dull red heat.

Proteins.—Total nitrogen determined on one to two grams by Kjeldahl-Gunning method and calculated to proteins by multiplying by 6.25. No separation of non-protein nitrogenous bodies was made.

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Ether Extract.—Both petroleum and sulphuric ethers were tried and found to give practically the same results. Taking the average of the 13 grains of 1922, the weight of extract was as 100 for sulphuric, to 99.2 for petroleum ether. Extraction by immersion for 10 days was found to give low results. The time and temperature of drying the sample before extraction greatly influenced the amount of fat obtained. Insufficiently dried samples gave high results, and those dried at a temperature of 105-110C. showed an average loss of 14 per cent. of the total extract. The time necessary to dry the fat to constant weight after extraction depended greatly upon the size of the neck of the receiving flask. With a wide necked flask 1½ hours was sufficient, with a narrow one over five hours.

The method finally adopted was:—

Two grams of sample dried for nine hours in water oven and extracted by sodium-dried sulphuric ether in soxhlet for 15 hours, and the extract dried in water oven until constant.

Crude Fibre.—This was estimated on the fat free residue by digestion in 200 c.c. of 1.25 per cent. acid and soda for 30 minutes in each case, and subsequent ashing of the washed and dried product. Filtering on linen proved satisfactory.

Nitrogen Free Extract.—Obtained by difference.

Calculations.—These were made according to Kellner, as outlined in his book "The Scientific Feeding of Animals". The digestive co-efficients were taken from table (I.) appendix, and those used appear in table (V.).

The Starch Equivalent.—Digest. proteins multiplied by 0.94, plus digest. N. free extract and fibre, plus digest fat multiplied by 1.91 in the coarse fodders, and 2.14 in the grain. In the case of grains, use was made of the value numbers, 95 per cent. for wheat and oats, 99 per cent. for barley. For the coarse fodders a deduction was made according to the amount of fibre present, being 58 per cent of the total fibre for hay, and straw, and a proportionate amount for ensilage.

The Nutritive Ratio.—

Digest. fat \times 2.2 + digest. N. free extract and fibre.

Digest. Proteins.

No digestion figures were available for the ripe plant, hence the composition only is tabulated.

TABLE V.—*Digestion Co-Efficients.*

	Protein.	Ether	Fibre.	N. Free	Value.
	%	Extract.	%	Extract.	%
		%		%	
Oats—Green plant	74	66	58	63	—
Hay	75	71	60	63	—
Straw	34	31	54	46	—
Grain	78	83	25	77	95
Wheat—Grain	84	63	47	92	95
Barley—Grain	70	90	33	92	90

TABLE VI.—Percentage Composition of Thirteen Varieties of Oaten Ensilage. Grown 1922.

	Algerian. Early.	Bath. Early.	Yarran. Early.	Early Burt.	Guyra. son.	Kher. son.	Lachlan. Mulga.	N.Z. Cape.	Quon- dong.	Scotch Grey.	Starks. Sunrise.	
Moisture	10-85 60-30	9-50 53-50	10-40 61-80	9-90 66-40	9-65 57-90	9-90 60-80	9-85 56-00	10-50 64-10	9-60 68-00	10-70 58-70	9-75 54-30	(i.) (ii.) 9-55 68-10
Ash	7-09 3-16 7-96	5-51 2-83 6-09	5-67 2-42 6-33	6-04 2-25 6-70	6-54 3-05 7-24	6-74 2-93 7-48	7-46 3-64 8-27	6-22 2-12 6-70	5-69 2-28 6-36	8-15 3-77 9-13	6-33 3-20 7-61	(i.) (ii.) (iii.) 5-10 1-80 5-64
Protein	6-43 2-87 7-22	3-04 2-02 4-35	4-90 2-09 5-47	6-76 2-52 7-50	5-25 2-45 5-81	6-32 2-75 7-01	5-27 2-57 5-85	7-15 2-44 7-94	5-45 2-19 6-09	6-21 2-20 6-87	4-09 2-07 4-53	(i.) (ii.) (iii.) 6-00 2-11 6-63
Ether extract (fat) ...	1-80 -80 2-02	1-63 -84 1-80	1-37 -58 1-53	1-87 -70 2-08	1-55 -72 1-72	1-99 -87 2-21	1-62 -79 1-80	2-21 -75 2-45	1-72 -69 1-92	1-60 -57 1-78	2-31 -75 2-59	(i.) (ii.) (iii.) 1-47 -59 1-84
Fibre	30-20 13-44 33-86	27-70 14-23 30-61	27-50 11-73 30-70	27-80 10-36 30-85	27-15 12-65 30-05	33-90 14-75 37-62	31-40 15-32 34-83	32-00 10-90 35-51	28-80 11-55 32-18	32-30 14-94 36-17	29-85 15-12 33-08	(i.) (ii.) (iii.) 29-45 10-39 32-56
N. free extract (carbo- hydrates)	43-63 19-43 48-94	51-72 26-58 57-15	50-16 21-38 56-97	47-83 17-77 52-87	49-86 23-23 55-18	41-15 17-90 45-68	44-40 21-68 49-25	42-52 14-49 47-20	47-84 19-19 53-45	45-94 18-16 50-81	49-51 24-56 53-75	(i.) (ii.) (iii.) 48-24 17-01 53-33
Digest. protein	2-12	1-49	1-55	1-86	1-81	2-04	1-90	1-81	1-62	1-63	1-53	(ii.) 1-56
Digest. fat	-54	-56	-38	-46	-48	-58	-52	-50	-46	-38	-50	(ii.) -40
Digest. fibre	7-79	8-25	6-80	6-01	7-34	8-56	8-88	6-70	6-12	8-67	8-77	(ii.) 6-03
Digest. carbo.	12-24	16-74	13-47	11-20	14-63	11-28	13-66	9-13	12-09	10-24	11-44	(ii.) 15-47 10-72
Starch equiv.	16-25	19-92	16-82	15-39	18-19	14-66	16-83	13-14	15-64	13-81	15-24	(ii.) 14-90
Nutrit. ratio	10-0	17-6	13-6	9-8	12-7	10-3	12-5	9-1	12-2	10-5	8-7	(iii.) 16-6 11-3

(iii.) Oven dry basis.

(ii.) Natural sample.

(i.) Air dry basis.

TABLE VII.—Percentage Composition of Thirteen Varieties of Oaten Ensilage. Grown 1923.

	Algerian.	Glen Innes.	Yarran.	Early Burt.	Guyra.	Kher. son.	Lachlan.	Mulga.	N.Z. Cape.	Quondong.	Scotch Gary.	Kellsall.	Sunrise.
Moisture	7.75 74.05	7.70 78.10	7.72 74.35	8.12 72.85	7.45 74.60	7.60 77.50	7.60 73.05	7.67 74.05	7.82 71.40	7.77 75.95	8.12 74.65	7.87 71.10	7.80 73.10
Ash	6.32 1.78 6.85	8.11 1.92 8.79	6.72 1.87 7.28	7.58 2.24 8.25	7.06 1.94 7.63	7.38 1.80 7.99	6.43 1.88 6.96	6.80 1.91 7.39	5.67 1.76 6.15	7.11 1.85 7.71	8.36 2.31 9.10	6.56 2.06 7.12	6.46 1.88 7.01
Protein	3.89 1.09 4.22	5.21 1.24 5.64	3.32 1.92 3.60	4.57 1.35 4.97	5.53 1.52 5.97	5.23 1.27 5.66	3.72 1.08 4.03	4.20 1.18 4.55	3.50 1.09 3.80	4.97 1.30 5.39	4.35 1.20 4.73	4.11 1.29 4.46	4.33 1.26 4.70
Ether extract (fat) ...	1.09 .30 1.18	1.19 .28 1.29	.86 .24 .93	1.55 .46 1.69	1.52 .42 1.64	1.52 .37 1.64	1.04 .30 1.13	.89 .25 .96	1.00 .31 1.08	1.23 .32 1.33	1.15 .32 1.25	1.43 .45 1.55	.93 .27 1.00
Fibre	28.00 7.87 30.35	32.33 7.67 35.02	29.25 8.13 31.70	30.03 8.87 32.68	28.77 7.89 31.09	31.07 7.57 33.63	28.72 8.38 31.07	30.10 8.46 32.60	29.25 9.08 31.73	30.97 8.07 33.58	31.10 8.58 33.85	28.70 9.00 31.16	28.85 8.42 31.29
N. free extract (carbo- hydrates)	52.95 14.91 57.40	45.46 10.79 49.26	52.13 14.49 56.49	48.15 14.23 52.41	49.67 13.63 53.67	47.20 11.49 51.08	52.49 15.31 56.81	50.34 14.15 54.53	52.76 16.36 57.24	47.95 12.51 51.99	46.92 12.94 51.07	51.33 16.10 55.71	51.63 15.07 56.00
Digest. protein .....	.81	.92	.68	1.00	1.12	.94	.80	.87	.81	.96	.89	.96	.93
Digest. fat .....	.20	.18	.16	.30	.28	.24	.20	.16	.20	.21	.21	.30	.18
Digest. fibre	4.56	4.45	4.72	5.14	4.58	4.39	4.86	4.91	5.27	4.68	4.98	5.22	4.88
Digest. carbo.	9.39	6.80	9.13	8.97	8.59	7.24	9.65	8.91	10.31	7.88	8.15	10.14	9.49
Starch equiv.	12.10	11.70	12.04	10.76	10.76	10.10	12.46	11.74	13.05	10.79	10.88	13.18	12.39
Nutrit. ratio	17.8	12.7	20.9	14.8	12.3	12.9	18.7	16.3	19.8	13.6	15.3	16.7	15.9

(i.) Air dry basis.

(ii.) Natural sample.

(iii.) Oven dry basis.

TABLE VIII.—Percentage Composition of Thirteen Varieties of Oaten Hay. Grown 1922.

	Algerian.	Bath Early.	Yarran.	Early Burt.	Guyra.	Kher. son.	Lachlan.	Mulga.	N.Z. Cape.	Quondong.	Scotch Grey.	Starks.	Sunrise.
Moisture	6.25	5.85	6.15	6.20	6.25	6.35	6.20	6.45	6.00	6.35	5.90	5.70	5.80 (i.)
Ash	6.04	5.53	5.86	5.89	6.02	6.34	5.71	6.83	6.66	6.54	7.50	6.14	6.11 (i.)
	6.44	5.87	6.24	6.28	6.42	6.77	6.09	7.30	7.09	6.98	7.97	6.51	6.48 (ii.)
Protein	6.74	4.81	6.15	5.10	4.94	7.13	6.17	7.57	7.74	6.45	7.04	5.34	5.84 (i.)
	7.19	5.11	6.55	5.44	5.27	7.61	6.58	8.09	8.24	6.89	7.48	5.66	6.20 (ii.)
Ether extract (fat) ...	2.90	1.95	2.09	2.99	2.61	2.68	2.42	2.84	2.43	2.20	2.80	1.93	2.53 (i.)
	3.09	2.07	2.23	3.19	2.78	2.86	2.58	3.04	2.59	2.35	2.98	2.05	2.69 (ii.)
Fibre	28.80	29.30	28.45	30.85	26.45	30.00	28.15	26.00	29.25	32.50	29.75	28.10	30.45 (i.)
	30.72	31.12	30.31	32.89	28.21	32.03	30.01	27.79	31.11	34.70	31.62	29.80	32.33 (ii.)
N. free extract (carbo-hydrates)	49.27	52.56	51.30	48.97	53.73	47.50	51.35	50.31	47.92	45.96	47.01	52.79	49.27 (i.)
	52.56	55.83	54.67	52.20	57.32	50.73	54.74	53.78	50.97	49.08	49.95	55.98	52.31 (ii.)
Digest prot.	5.06	3.61	4.61	3.83	3.70	5.35	4.63	5.68	5.81	4.84	5.28	4.01	4.38 (i.)
Digest fat	2.06	1.38	1.48	2.12	1.85	1.90	1.72	2.02	1.73	1.56	1.99	1.37	1.80 (i.)
Digest fibre	17.28	17.68	17.07	18.51	15.87	18.00	16.89	15.60	17.55	19.50	17.85	16.86	18.27 (i.)
Digest carbo.	31.04	33.11	32.32	30.85	33.85	29.92	32.35	31.69	30.19	28.95	29.62	33.26	31.04 (i.)
Starch equiv.	40.30	39.73	40.06	39.12	41.36	39.18	40.54	41.40	39.54	37.13	38.98	40.20	39.20 (i.)
Nutrit. ratio	10.40	14.9	11.4	14.1	14.5	9.7	11.5	9.1	8.9	10.7	9.8	13.3	12.2 (i.)

(ii.) Oven dry basis.

(i.) Air dry basis.

TABLE IX.—Percentage Composition of Thirteen Varieties of Oaten Hay. Grown 1923.

	Algerian.	Glen Innes.	Yarran.	Early Burt.	Guyra.	Kher-son.	Lachlan.	Mulga.	N.Z. Cape.	Quon-dong.	Scotch Grey.	Kellsall. Sunrise.	
Moisture	10.57	10.40	10.65	10.20	10.45	10.00	10.75	10.17	10.05	9.92	10.17	10.05	10.40. (i.)
Ash	5.23	5.13	5.35	5.59	4.78	5.30	5.18	5.54.	5.12	6.08	6.00	5.10	5.08 (i.)
	5.85	5.73	5.99	6.22	5.34.	5.89	5.80	6.17	5.69	6.75	6.68	5.67	5.67 (ii.)
Protein	2.62	3.22	2.54	3.89	2.93	3.26	3.17	3.43	3.00	4.42	2.80	3.17	3.43 (i.)
	2.93	3.70	2.84	4.33	3.27	3.62	3.55	3.82	3.33	4.91	3.12	3.52	3.83 (ii.)
Ether extract (fat) ...	2.42	2.50	1.90	3.68	1.89	2.55	2.36	2.72	2.49	2.75	3.10	3.38	2.11 (i.)
	2.71	2.79	2.13	4.10	2.11	2.83	2.65	3.03	2.77	3.05	3.45	3.76	2.35 (ii.)
Fibre	24.85	24.45	25.35	25.57	23.95	27.35	24.50	25.80	25.27	24.72	27.00	24.77	25.35 (i.)
	27.79	27.29	28.37	28.47	26.74	30.39	27.45	28.72	28.69	27.44	30.06	27.54	28.29 (ii.)
N. free extract (carbo-hydrates)	54.31	54.20	54.21	51.07	56.00	51.54	54.04	52.34	54.07	52.11	50.93	53.53	53.63 (i.)
	60.72	60.49	60.67	56.88	62.54	57.27	60.55	58.26	60.12	57.85	56.69	59.51	59.86 (ii.)
Digest. prot.	1.96	2.49	1.90	2.92	2.20	2.44	2.38	2.57	2.25	3.31	2.10	2.38	2.57 (i.)
Digest. fat	1.72	1.78	1.35	2.61	1.34	1.81	1.68	1.93	1.77	1.95	2.20	2.40	1.50 (i.)
Digest. fibre	14.91	14.67	15.21	15.34	14.37	16.41	14.70	15.48	15.16	14.88	16.20	14.86	15.21 (i.)
Digest. carbo	34.22	34.15	34.15	32.18	35.28	32.47	34.05	32.98	34.06	32.83	32.08	33.72	33.79 (i.)
Starch equiv.	39.85	40.37	39.03	39.06	40.39	38.78	39.98	39.61	40.06	40.17	38.79	41.03	39.58 (i.)
Nutrit. ratio	27.0	21.2	27.5	18.2	23.9	21.7	22.0	20.5	23.6	15.7	25.3	22.6	20.3 (i.)

(i.) Air dry basis.

(ii.) Oven dry basis.

TABLE X.—Percentage Composition of Thirteen Varieties of Ripe Oaten Plant. Grown 1922.

	Algerian.	Bath.	Yarran.	Early	Guyra.	Kher- son.	Lachlan.	Mulga.	N.Z. Cape.	Quon- dong.	Scotch Grey.	Starks.	Sunrise.
Moi ture	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	(i.)
Ash	4.90 5.21	5.16 5.49	5.01 5.33	5.47 5.82	4.59 4.88	4.46 4.74	4.74 5.04	6.16 6.55	5.08 5.40	4.98 5.30	5.16 5.49	4.43 4.71	4.30 4.58 (i.) (ii.)
Protein	5.91 6.29	5.14 5.47	4.40 4.68	4.19 4.46	5.73 6.10	6.35 6.75	4.30 4.58	4.22 4.49	5.57 5.93	2.40 2.55	5.64 6.00	5.18 5.51	4.77 5.08 (i.) (ii.)
Ether extract (fat) ...	2.24 2.38	1.78 1.89	2.03 2.16	3.39 3.61	2.38 2.53	1.89 2.01	2.03 2.16	2.19 2.33	2.19 2.33	1.28 1.36	2.36 2.51	2.43 2.59	1.89 2.01 (i.) (ii.)
Fibre	30.21 32.14	32.95 35.05	30.68 32.64	30.51 32.46	26.71 28.42	27.93 29.71	31.38 33.38	31.56 33.57	31.10 33.08	35.68 37.96	32.58 34.66	30.76 32.72	31.78 33.81 (i.) (ii.)
N. free extract (carbo- hydrates)	50.75 53.98	48.97 52.10	51.88 55.19	50.44 53.65	54.59 58.07	53.37 56.79	51.55 54.84	49.87 53.06	50.06 53.26	49.66 52.83	48.26 51.34	51.20 54.47	51.26 54.52 (i.) (ii.)

(i.) Air dry basis.

(ii.) Oven dry basis.

TABLE XI.—Percentage Composition of Thirteen Varieties of Ripe Oaten Plant. Grown 1923.

	Algerian.	Glen Innes.	Yarran.	Early Burt.	Guyra.	Kher- son.	Lachlan.	Mulga.	N.Z. (ape.	Quon- dong.	Scotch Grey.	Kell- sall.	Sunrise.
Moisture	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	(i.)
Ash	5.38	5.48	4.50	5.73	4.93	5.67	4.85	5.15	4.27	5.25	5.31	4.82	5.43 (i.)
	5.72	5.83	4.79	6.10	5.25	6.03	5.16	5.48	4.54	5.58	5.65	5.13	5.78 (ii.)
Protein	3.71	5.24	2.91	4.18	4.06	4.86	3.77	3.88	3.08	4.47	3.41	4.01	4.08 (i.)
	3.95	5.57	3.10	4.45	4.32	5.17	4.01	4.13	3.91	4.75	3.63	4.27	4.98 (ii.)
Ether extract (fat) ...	2.71	1.99	2.20	3.53	2.10	2.08	2.33	2.86	2.71	2.61	3.49	3.59	2.39 (i.)
	2.88	2.12	2.34	3.75	2.23	2.21	2.48	3.04	2.88	2.78	3.71	3.82	2.54 (ii.)
Fibre	26.90	28.53	29.65	28.03	26.18	29.88	27.73	28.01	28.63	28.85	28.21	25.42	27.82 (i.)
	28.62	30.35	31.54	29.82	27.85	31.79	29.50	29.80	30.46	30.69	30.01	27.04	29.59 (ii.)
N. free extract (carbo- hydrates)	55.30	52.76	54.74	52.53	56.73	51.51	55.32	54.10	54.71	52.82	53.58	56.16	53.68 (i.)
	58.83	56.13	58.23	55.88	60.35	54.80	58.85	57.55	58.21	56.20	57.00	59.74	57.11 (ii.)

(i.) Air dry basis.

(ii.) Oven dry basis.

TABLE XII.—Percentage Composition of Thirteen Varieties of Oaten Straw. Grown 1922.

	Algerian.	Bath.	Yarran.	Early	Guyra.	Kher-	Lachlan.	Mulga.	N.Z.	Quon-	Scotch	Starks.	Sunrise.
	Early.			Burr.		son.			Cape.	dong.	Grey.		
Moisture	8.00	8.05	8.05	8.00	8.25	7.50	7.20	8.10	7.60	7.30	8.10	8.00	7.45 (i.)
Ash	5.87	5.67	6.00	6.38	5.64	5.46	5.56	6.98	6.02	4.99	5.77	5.18	4.88 (i.)
	6.38	6.17	6.52	6.93	6.12	5.90	5.99	7.59	6.51	5.38	6.28	5.63	5.27 (ii.)
Protein	1.88	1.79	1.44	1.55	1.71	1.38	1.49	1.75	1.62	1.60	2.84	1.44	1.27 (i.)
	2.04	1.95	1.57	1.68	1.87	1.49	1.61	1.90	1.75	1.73	3.09	1.57	1.37 (ii.)
Ether extract (fat) ...	.85	.71	.87	1.23	1.26	.91	.84	1.09	.48	.84	.86	.60	.56 (i.)
	.92	.77	.95	1.34	1.38	.98	.91	1.19	.52	.91	.94	.65	.61 (ii.)
Fibre	38.90	39.15	39.15	38.50	35.45	40.15	39.85	36.80	40.40	37.20	40.45	41.05	41.60 (i.)
	42.28	42.57	42.57	41.85	38.65	43.41	42.94	40.04	43.72	40.12	44.02	44.62	44.94 (ii.)
N. free extract (carbo- hydrates)	44.50	44.63	44.49	44.34	47.69	44.60	45.06	45.28	43.88	48.07	41.98	43.73	44.24 (i.)
	48.38	48.54	48.39	48.20	51.98	48.22	48.55	49.28	47.50	51.86	45.67	47.53	47.81 (ii.)
Digest. protein .....	.64	.61	.49	.53	.58	.47	.51	.59	.55	.54	.97	.49	.43 (i.)
Digest. fat .....	.26	.22	.27	.38	.39	.28	.26	.34	.15	.26	.27	.19	.17 (i.)
Digest. fibre	21.01	21.14	21.14	20.79	19.14	21.68	21.52	19.87	21.82	20.09	21.85	22.17	22.46 (i.)
Digest. carbo.	20.47	20.53	20.46	20.40	21.93	20.51	20.72	20.83	20.18	22.11	19.31	20.11	20.35 (i.)
Starch equiv.	20.02	19.95	19.87	20.08	22.81	19.88	20.11	20.56	19.37	21.63	19.12	19.29	19.42 (i.)
Nutrit. ratio	65.7	69.1	86.1	79.3	72.3	91.1	84.0	70.2	77.0	79.2	43.0	87.1	100.0 (i.)

(i.) Air dry basis.

(ii.) Oven dry basis.

TABLE XIII.—*Percentage Composition of Thirteen Varieties of Oaten Straw. Grown 1923.*

	Algerian.	Glen Innes.	Yarran.	Early Burt.	Guyra.	Kher-son.	Lachlan.	Mulga.	N.Z. (Cape.)	Quandong.	Scotch Grey.	Kellsall.	Sunrise.
Moisture	9.95	13.60	9.92	9.75	8.95	9.89	9.95	9.90	9.60	9.40	10.70	10.37	12.15 (i.)
Ash	5.80	6.10	5.03	6.75	5.58	7.03	5.54	6.26	4.58	6.07	6.32	6.12	6.14 (i.)
	6.44	7.06	5.58	7.48	6.13	7.80	6.15	6.95	5.07	6.70	7.08	6.83	6.99 (ii.)
Protein .....	.90	1.12	.89	.90	1.02	.95	.96	.84	.80	.88	.83	.90	1.09 (i.)
	1.00	1.30	.99	1.00	1.12	1.05	1.06	.93	.88	.97	.93	1.00	1.24 (ii.)
Ether extract (fat) ...	.63	.58	.50	.59	.73	.72	.61	.51	.50	.66	.65	.60	.51 (i.)
	.70	.67	.56	.65	.80	.80	.68	.57	.55	.73	.73	.67	.58 (ii.)
Fibre	35.00	35.95	36.92	39.32	33.87	41.00	35.55	38.77	36.62	39.77	38.45	36.65	36.70 (i.)
	38.87	41.60	40.98	43.57	37.20	45.50	39.48	43.03	40.51	43.90	43.05	40.89	41.78 (ii.)
N. free extract (carbo- hydrates)	47.72	42.65	46.74	42.49	49.85	40.41	47.39	43.72	47.90	43.22	43.05	45.36	43.41 (i.)
	52.99	49.37	51.89	47.30	54.75	44.85	52.63	48.52	52.99	47.70	48.21	50.61	49.41 (ii.)
Digest. protein.....	.31	.38	.30	.31	.35	.32	.33	.29	.27	.30	.28	.31	.37 (i.)
Digest. fat .....	.20	.18	.16	.18	.23	.22	.19	.16	.16	.20	.20	.19	.16 (i.)
Digest. fibre	18.90	19.41	19.94	21.23	18.20	22.14	19.20	20.94	19.78	21.48	20.76	19.79	19.98 (i.)
Digest. carbo.	21.95	19.62	21.50	19.44	22.93	18.50	21.80	20.11	22.04	19.88	20.87	20.87	19.97 (i.)
Starch equiv.	21.21	18.88	20.60	18.71	22.33	17.68	21.05	19.13	21.14	18.96	18.91	20.05	19.31 (i.)
Nutrit. ratio	133.	104.	139.	133.	119.	129.	125.	143.	156.	139.	146.	132.	109. (i.)

(i.) Air dry basis.

(ii.) Oven dry basis.

TABLE XIV.—Percentage Composition of Thirteen Varieties of Oaten Grain. Grown 1922.

	Algerian.	Bath. Early.	Yarran.	Early Burt.	Guyra.	Kher- son.	Lachlan.	Mulga.	N.Z. Cape.	Quon- dong.	Scotch Grey.	Starks.	Sunrise.
Moisture	7.05	7.00	7.00	6.00	7.05	6.70	5.00	5.65	5.95	7.05	6.45	5.65	7.10 (i.)
Ash	3.04 3.27	3.39 3.65	2.83 3.04	3.32 3.53	2.75 2.96	3.06 3.28	2.95 3.10	3.20 3.39	3.23 3.43	4.30 4.63	3.30 3.53	3.00 3.18	2.95 (i.) 3.18 (ii.)
Protein	12.34 13.28	14.08 15.13	9.93 10.68	9.62 10.23	11.72 12.61	12.45 13.34	10.04 10.57	11.64 12.34	12.49 13.28	9.19 9.89	12.34 13.19	11.37 12.05	11.72 (i.) 12.62 (ii.)
Ether extract (fat) ...	4.46 4.80	4.64 4.99	4.15 4.46	7.81 8.31	4.00 4.30	3.10 3.32	4.46 4.69	5.45 5.78	5.17 5.50	4.98 5.36	5.97 6.38	5.48 5.81	4.50 (i.) 4.84 (ii.)
Fibre	14.35 15.44	13.37 14.38	12.60 13.55	12.25 13.03	11.80 12.70	11.70 12.54	13.35 14.05	13.15 13.94	13.55 14.41	17.15 18.45	10.75 11.49	12.25 12.99	10.40 (i.) 11.20 (ii.)
N. free extract (carbo- hydrates)	58.76 63.21	57.52 61.85	63.49 68.27	61.00 64.90	62.68 67.43	62.99 67.52	64.20 67.59	60.91 64.55	59.61 63.38	57.33 61.67	61.19 65.41	62.25 65.97	63.33 (i.) 68.16 (ii.)
Digest. protein	9.63	11.00	7.74	7.50	9.14	9.71	7.83	9.08	9.74	7.17	9.63	8.87	9.14 (i.)
Digest. fat	3.70	3.85	3.44	6.48	3.32	2.57	3.70	4.52	4.29	4.13	4.95	4.55	3.73 (i.)
Digest. fibre	3.59	3.34	3.15	3.06	2.95	2.92	3.34	3.29	3.39	3.06	2.69	3.06	2.80 (i.)
Digest. carbo.	45.25	44.29	48.89	46.98	48.27	48.51	49.44	46.90	45.90	44.15	47.12	47.94	48.77 (i.)
Starch equiv.	62.45	62.82	63.29	67.30	63.50	62.72	64.59	64.89	64.17	60.74	65.90	65.52	64.49 (i.)
Nutrit. ratio	5.9	5.1	7.7	8.6	6.4	5.9	7.8	6.6	6.0	8.0	6.3	6.9	6. (i.)

(i.) Air dry basis.

(ii.) Oven dry basis.

TABLE XV.—Percentage Composition of Thirteen Varieties of Oaten Grain. Grown 1923.

	Algerian.	Glen Innes.	Yarran.	Early Burt.	Guyra.	Kher-son.	Lachlan.	Mulga.	N.Z. Cape.	Quon-dong.	Scotch Grey.	Kellsall.	Sunrise.
Moisture	6.45	7.42	6.67	6.35	7.15	6.87	7.02	6.50	6.30	6.35	6.00	6.05	6.55 (i.)
Ash	4.32	3.43	3.06	4.04	3.43	3.20	3.27	3.27	3.41	3.69	3.47	3.17	3.76 (i.)
	4.62	3.70	3.28	4.31	3.69	3.43	3.52	3.50	3.64	3.94	3.69	3.37	4.02 (ii.)
Protein	7.87	11.92	6.67	8.38	9.32	10.43	8.29	7.92	8.62	9.67	6.91	7.22	9.73 (i.)
	8.41	12.87	7.15	8.95	10.04	11.20	8.91	8.47	9.20	10.33	7.35	7.68	10.41 (ii.)
Ether extract (fat) ...	5.78	4.28	5.35	7.31	4.45	3.99	5.10	5.98	6.50	5.44	7.35	6.67	5.05 (i.)
	6.18	4.62	5.73	7.80	4.79	4.28	5.48	6.39	6.94	5.81	7.82	7.10	5.40 (ii.)
Fibre	12.27	10.30	12.55	11.12	10.35	11.02	12.02	11.05	12.07	10.47	11.37	11.85	11.12 (i.)
	13.12	11.13	13.45	11.88	11.15	11.83	12.92	11.82	12.88	11.18	12.09	12.61	11.90 (ii.)
N. free extract (carbo-hydrates)	63.31	62.65	65.70	62.80	65.30	64.49	64.30	65.28	63.10	64.38	64.90	65.04	63.79 (i.)
	67.67	67.68	70.39	67.06	70.33	69.26	69.17	69.82	67.34	68.74	69.05	69.24	68.27 (ii.)
Digest. protein	6.14	9.30	5.20	6.54	7.27	8.14	6.47	6.18	6.72	7.54	5.39	5.63	7.59 (i.)
Digest. fat	4.80	3.55	4.44	6.07	3.09	3.31	4.23	4.96	5.39	4.51	6.10	5.54	4.19 (i.)
Digest. fibre	3.07	2.57	3.14	2.78	2.59	2.75	3.00	2.76	3.02	2.62	2.84	2.96	2.78 (i.)
Digest. carbo.	48.76	48.25	50.60	48.36	50.29	49.66	49.52	50.27	48.59	49.58	49.98	50.06	49.12 (i.)
Starch equiv.	64.38	63.74	64.64	66.64	64.16	63.73	64.20	65.90	65.90	65.42	67.28	66.55	64.53 (i.)
Nutrit. ratio	10.2	6.3	12.2	9.9	8.4	7.3	9.6	10.3	9.5	8.3	12.3	11.4	8.0 (i.)

(i.) Air dry basis.

(ii.) Oven dry basis.

On comparing the variation in the composition of the different oats in all stages, with the seasonal variation of any particular oat, it will clearly be seen that the difference of season has had much greater effect than the difference of variety, hence no comparative valuation of these oats can be made, until an average composition for many seasons has been determined.

The next table, No. XVI., gives the average composition of all varieties, at all stages, for the separate seasons, and is of interest in that it shows the comparative food values of different products, when oven dry.

The most interesting fact brought out in this table is that though the starch equivalents are approximately the same for each product in the two seasons, the proteins in each fall considerably in 1923, and

TABLE XVII. AVERAGE COMPOSITION OF 11 VARIETIES OF OATS

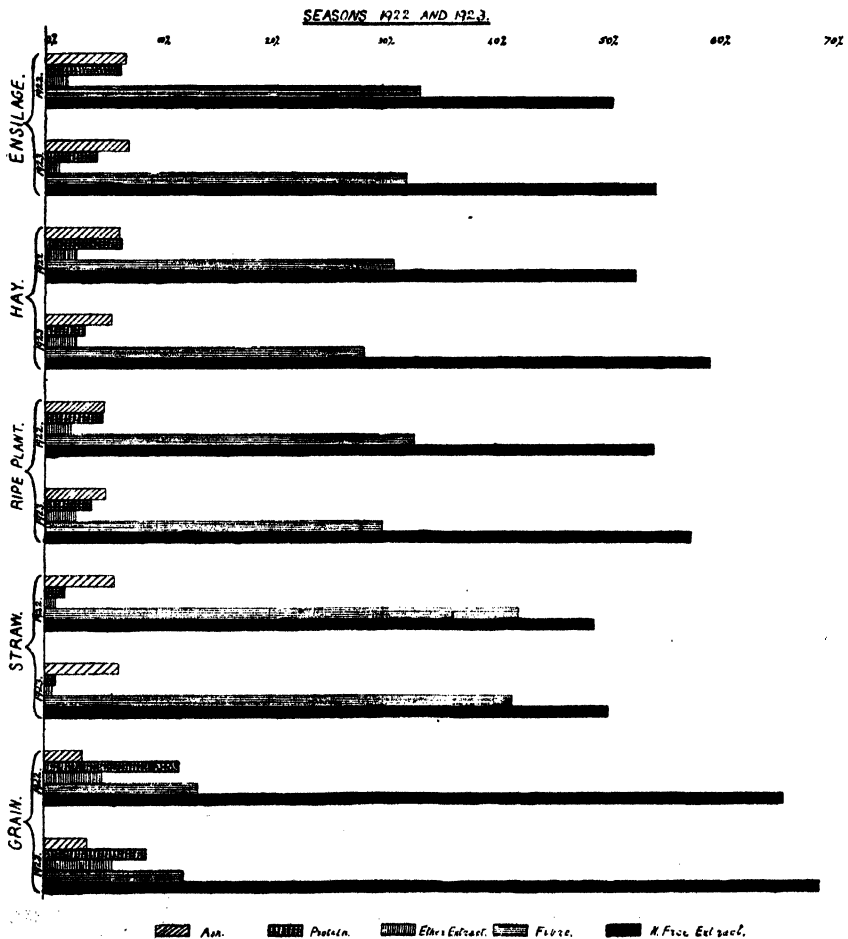


TABLE XVI.—*Showing Average Composition of Eleven Varieties of Oats. Grown 1922 and 1923.*

	EXPRESSED AS PER CENT. OF DRY MATTER.						1923.			
	1922.									
	Ensilage.	Hay.	Straw.	Grain.	Ripe Plant.	Ensilage.	Hay.	Straw.	Grain.	Ripe Plant.
Ash	7.23	6.73	6.26	3.39	5.30	7.48	6.00	6.58	3.78	5.46
Protein	6.78	6.87	1.82	12.00	5.17	4.69	3.60	1.02	9.13	4.22
Ether extract (fat)	1.99	2.76	.97	5.25	2.31	1.26	2.83	.67	6.06	2.80
Fibre	33.39	31.06	42.23	13.71	32.90	32.14	28.35	41.62	12.20	29.97
N. free extract (carbohydrates) ..	50.61	52.58	48.72	65.65	54.32	54.43	59.22	50.11	68.83	57.55
Digest. prot.	5.02	5.15	.62	9.36	—	3.47	2.70	.35	7.12	—
Digest. fat	1.31	1.96	.30	4.36	—	.83	2.01	.21	5.03	—
Digest. fibre	19.36	18.64	22.81	3.43	—	18.64	17.01	22.47	3.05	—
Digest. carbo.	31.88	33.12	22.41	50.55	—	34.29	37.30	23.05	53.00	—
Starch equiv.	39.11	42.33	21.88	68.42	—	39.14	44.25	22.12	68.74	—
Nutrit. ratio	10.8	10.9	74.0	6.8	—	15.8	21.8	131.4	9.4	—

in the case of hay there is only about one-half the percentage of proteins as was present in the preceding year, while the nutritive ratio widens from 10.9 to 21.8, exactly double. This can best be appreciated by reference to graphic Table XVII.

It will be noticed that the protein content of the grain of 1923 is very little in excess of that found in the hay of the preceding season. Though in both years the straw contained little protein as would be expected, in 1923 only 1 per cent. was present.

On comparing the average per cent. of fibre in the grain of the two seasons (13.71—12.20) with the respective amounts of hull (34.2 and 28.8), it will be seen that the fibre is largely concentrated in the hull.

This question of proteins will be again referred to.

Passing from oats to other fodders, one or two are of sufficient interest to mention.

Sudan Grass (Andropogon Sorghum var.).—This crop is coming into prominence throughout Australia. In Queensland it grows to a height of 9 or 10 feet, and though not attaining such growth here it has proved a very serviceable fodder. Sudan grass when sown in the late spring, makes rapid growth, and though until lately used chiefly as a greenfeed, its value as a hay crop is becoming established.

An analysis of Sudan grass grown at the College last year, showed the proteins to be present in the flowering stage in quantity. These fell off very considerably during the ripening period, dropping from 10.8 to 4.3 per cent. A fall in proteins at this stage has been noticed by other investigators, (2) but not to such a marked extent as here found.

Sudan grass is poor in fats. Comparing it with oaten hay, when flowering the former contains little more than one-half the amount found in the oats, and on ripening the percentage falls from 1.72 to 0.76. Provided the crude proteins do not include a large per cent. of amides and other intermediate nitrogenous bodies, which might induce scouring, the flowering stage appears to be the best for hay.

It is well known that cyanogenic glucosides are present in most sorghums. Sudan grass is no exception. The particular samples analysed, however, show them to be only about one-third as poisonous as sorghum in the young stage, and negligible from heading onwards.

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TABLE XVIII.—*Composition of Sudan Grass. Grown 1923-4.*

		(i.) Just before Heading. %	(ii.) Flowering. %	(iii.) Milk Ripe. %
Moisture	(a)	7.05	6.70	8.45
Ash	(a)	8.30	7.95	7.25
	(b)	8.93	8.52	7.92
Protein	(a)	9.75	10.87	4.31
	(b)	10.49	11.65	4.71
Ether Ext.	(a)	1.29	1.72	.76
	(b)	1.39	1.84	.83
Fibre	(a)	24.60	24.45	28.60
	(b)	26.46	26.20	31.24
N. Free Ext.	(a)	49.01	48.31	50.63
	(b)	52.73	51.79	55.30

(a) Air dry.

(b) Oven dry.

TABLE XIX.—*Hydrocyanic Acid (HCN) in Sudan Grass. Grown 1923-4.*

(i.) Just before Heading.	(ii.) Flowering.	(iii.) Milk Ripe.
%	%	%
.0065	.0016	.00054

Expressed on air dry material.

Berseem Clover (Trifolium Alexandrinum).—This annual was introduced by Professor Perkins from Egypt some twelve years ago, and has proved very valuable to the College as a winter feed. It produces three or four cuts during the winter and spring, yielding upwards of thirty tons of green feed for the season. Though the green plant is low in food value owing to its high water content, it contains a fair quantity of proteins, and growing as it does when other legumes, such as lucerne, are making no headway, it proves a very useful crop.

TABLE XX.

Percentage Composition of Berseem Clover.—Season 1922.

	Air dry.	Green.	Oven dry.
Moisture	13.90	88.05	—
Ash	10.47	1.45	12.16
Protein	13.13	1.82	15.25
Ether extract	2.15	0.30	2.50
Fibre	18.60	2.58	21.60
N. free extract	41.75	5.80	48.49

On account of the fact that many farmers sell their screenings at a low price and retain some of their better grain for feed, the oat, barley, and wheaten grain was examined last season and a comparative analysis of the full and shrivelled grain is given in Table XXI.

It will be seen that the screenings are, on the whole, slightly higher in proteins and fats, and, therefore, providing the shrivelled grain is as digestible as the full, the former has a rather better food value.

TABLE XXI.—Percentage Composition of *Pump and Shrivelled Grains. Grown 1923.*

	WHEAT.				BARLEY.				OATS.			
	Gluyas.		King's White.		Prior.		Roseworthy Oregon.		Guyra.		Mulga.	
	Pump.	Shrivelled.	Pump.	Shrivelled.	Pump.	Shrivelled.	Pump.	Shrivelled.	Pump.	Shrivelled.	Pump.	Shrivelled.
Moisture	8.72	8.37	9.07	8.50	7.72	8.55	7.90	6.65	8.15	7.32	6.37	6.75 (i.)
Ash	1.85	2.11	2.08	2.25	2.87	3.26	2.74	2.90	3.85	3.88	4.07	3.64 (i.)
	2.03	2.30	2.29	2.46	3.11	3.56	2.97	3.11	4.19	4.19	4.35	3.90 (ii.)
Protein	11.59	12.25	12.34	12.25	8.58	8.58	12.25	13.30	8.66	8.84	8.66	8.92 (i.)
	12.70	13.37	13.57	13.40	9.30	9.38	13.30	14.25	9.43	9.54	9.25	9.57 (ii.)
Ether extract (fat)	1.16	1.14	.96	1.02	1.35	1.45	1.16	1.28	3.68	5.20	5.28	6.18 (i.)
	1.27	1.24	1.06	1.11	1.46	1.59	1.26	1.37	4.01	5.61	5.64	6.63 (ii.)
Fibre	2.45	2.95	2.92	3.32	4.25	6.40	5.85	7.40	11.40	7.95	10.95	8.62 (i.)
	2.68	3.22	3.21	3.63	4.61	7.00	6.35	7.93	12.41	8.58	11.69	9.24 (ii.)
N. free extract	74.23	73.18	72.63	72.66	75.23	71.76	70.10	68.47	64.26	66.81	64.67	65.89 (i.)
(carbohydrates)	81.32	79.87	79.87	79.40	81.52	78.47	76.12	73.34	69.96	72.08	69.07	70.66 (ii.)
Digest. protein...	9.73	10.29	10.36	10.29	6.01	6.01	8.58	9.31	6.76	6.89	6.76	6.96 (i.)
Digest. fat .....	.73	.72	.60	.64	1.21	1.30	1.04	1.15	3.05	4.32	4.38	5.13 (i.)
Digest. fibre	1.15	1.39	1.37	1.56	2.11	2.11	1.93	2.44	2.85	1.99	2.74	2.16 (i.)
Digest. carbo.	68.30	67.32	66.82	66.82	69.21	66.02	64.49	62.99	49.48	51.44	49.80	50.74 (i.)
Starch equiv.	76.14	75.91	75.25	75.47	78.05	75.79	75.92	75.86	61.90	65.62	64.77	66.81 (i.)
Nutrit. ratio	7.3	6.8	6.7	6.8	12.2	11.8	8.0	7.3	8.7	9.1	9.2	9.2 (i.)

(i.) Air dry basis.

(ii.) Oven dry basis.

In the case of the oats a large percentage of husked grains pass into the screenings, which will, therefore, probably prove at any rate as digestible as the graded sample, and are slightly higher in proteins, considerably higher in fats, and have a better starch value.

Passing to the general question of food values, useful as a guide to the economical production of stock in South Australia, the authors of this paper are strongly of the opinion that insufficient stress is laid on the importance of proteins.

One of the earliest systems of valuing foods was devised by Thaer (3) in the beginning of the nineteenth century, who based his comparison almost entirely on the nitrogen content. Later König (4) took into account the other constituents giving them a relative value of approximately 3 : 3 : 1 for proteins, fats, and carbohydrates respectively. Certain absurdities by this method of computing values, were exposed by American chemists (5) and authorities have adopted in general the more recent Kellner starch values.

Now these value protein at less than either starch or fat, and it is contended that under our conditions of feeding, proteins are by far the most important constituents of a concentrate, and that the latter should be valued to a large extent directly on a protein basis. Dr. Woll (6) has expressed the opinion that the computation of food values by the starch equivalent must only have a limited application, and is no sure guide in respect to growing and breeding stock.

The practice of hand-feeding is in its infancy here, except perhaps as regards dairying and stall feeding of horses. There are, however, a number of sheep farmers, who are finding it profitable to hand feed ewes during certain seasons, and undoubtedly this system will become general in time.

During the months of May to August in many districts natural pasture is scarce, and this is the particular period when ewes need the best of food for lambing and weaning. lambs for fattening, and all sheep for production of wool, which particularly at this time drains the resources of the animal. Our natural pastures, though containing a sufficiency of starch and fat, are fibrous. Consequently the stomach is over-loaded, unnecessary bulk must be carried, and the energy used in digestion is considerable. Unfortunately no figures are available as to the protein contents and digestibility of our natural grasses, but one can safely say that the albuminoid ratio on pasture generally is much wider than recommended for producing, fattening, and working stock by European and American authorities.

The growing shoots of young grass, though high in total nitrogen, do not contain this all in the form of proteins. Amides and other nitrogenous compounds are present, which to a large extent are not assimilated by the animal, and are liable to cause scouring. The starch or energy value of a fodder is little guide to its actual value, where the protein contents are low.

As a practical example of this fact, the experience of the farmers in the Gawler district this season may be quoted. They report that last year's hay will not keep their horses in condition, whereas that cut the season before proves excellent.

On referring to Table XVI., it will be seen that the fats and carbohydrates are higher in last season's hay than in the previous years, so also is the starch equivalent. The proteins, however, as has been remarked, dropped from a percentage of 6.87 to that of 3.60, and the nutritive or albuminoid ratio widened from 10.9 to 21.8.

These low protein contents are undoubtedly the cause of the inferiority of last season's hay, and it would appear that a very wet growing period is unfavourable for the production of proteins. Kellner (7) recommends the nutritive ratio for a working horse to be about 1 to 9, while Wolff (8) makes it 1 to 6, and for growing and fattening stock it should be still narrower.

Whether these ratios apply to stock under our climatic conditions has not been determined, but a ratio of 1 to 22 is obviously much too wide and no amount of crushed oats with last season's ratio of 1 to 9.4 added to the hay can bring the ratio into narrow enough limits.

The use of lucerne hay with a ratio of 1 to 3.3, or of concentrates with high protein value, such as crushed peas 1 to 3.2, bran 3.6, or even oil cakes, such as linseed meal with a ratio of 1 to 1.4, may be found of great benefit in the compounding of rations, and in the balancing of pasture.

In conclusion, it may be stated that the question of feeds and feeding has received little attention as yet in Australia, particularly as regards the digestibility of fodders.

Valuable work was done in this direction some years ago by Professor Perkins and Messrs. Spafford and Phillips, (9) who tested the digestibility of wheaten hay at different stages of maturity fed to horses, while latterly Messrs. Brunnich and Rawson (10) of Queensland observed the digestibility of various fodders supplied to sheep.

In general, however, there is little data available on which to base an improvement in our methods of feeding under Australian conditions, and since the pastoral industry of the Commonwealth for last year was computed to be worth £70,000,000, there can be no doubt that there is scope for very valuable work in this direction both in the laboratory and in the feeding pen.

SOUTH AUSTRALIAN OATS AND OTHER FODDERS.

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FIRST ANNUAL WHEAT CROP COMPETITION OF THE MIDLAND DISTRICT OF SOUTH AUS- TRALIA, 1924.

The district conducting a wheat crop competition under the name of Midland District comprises all of the country represented by Branches of the Agricultural Bureau located along the railway lines between Hamley Bridge and Farrell's Flat, and between Hamley Bridge and Spalding. There is a considerable area of agricultural land in this district, and although the climatic conditions vary to only a comparatively small extent between the different parts of the district, the differences between soil types are really great, varying from light, sandy soils of comparatively low fertility to extremely rich lands capable of growing luxuriant crops of all kinds. With such marked variations in soil types it is difficult to conduct a crop-growing competition so that all competitors will be on anything like an equal footing, but as we gain experience in these matters we should be able to get close to this ideal. For this season the 100 points allowed in judging the crops have been divided up as follows:—

Apparent yield	60
Trueness to type	10
Freedom from disease	10
Freedom from weeds	15
Evenness of crop	5

The judging of the 53 crops submitted was carried out between November 17th and November 28th, with the results as set out in the following table.

MIDLAND DISTRICT WHEAT CROP COMPETITION, 1924.

Competitor's Name.	Address.	Position.	Variety.	Details of Judging.					Total.
				Ap- parent Yield.	True- ness to Type.	Free- dom from Disease.	Free- dom from Weeds.	Even- ness of Crop.	
				60	10	10	15	5		100
Frost, L. W.	Saddleworth ..	1	{ Federation Field Marshall ..	54	9.5	9.5	14.5	4.5	92
Frost, A. L.	Riverton	2	{ Major Federation	59	8	9.5	10.5	4.5	91.5
Wardle, H. P.	Porter's Lagoon	3	{ Major Federation	54	8	9	13	4.5	88.5
Schirmer, A. G.	Saddleworth ..	4	Florence	52	8.5	9.5	12	4.5	86.5
McInerney, John ...	Riverton	= 5	Federation	49.5	9.5	9.5	13.5	4	86
Schunke, A. G.	Manoora	= 5	{ Nugget Federation	50	9	8.5	14	4.5	86
Coleman, F.	Saddleworth ..	= 7	{ Federation Marshall's Pride	50.5	9	9	13.5	3.5	85.5
Frost, W. T.	Manoora	= 7	{ Federation Major	50.5	9.5	9	13	3.5	85.5
Torr, J. H.	Farrell's Flat ..	9	Federation	52	8	8	13.5	3.5	85
Clarke, D. L.	Tarlee	10	{ Crossbred 53 ... Major	52	8	8.5	12.5	3.5	84.5
Sanders, H. E. & J. H.	Tarlee	11	{ Late Gluyas King's White ... Major	49	9	8.5	13.5	4	84
Badman, M. D.	Tarlee	12	{ Crossbred 53 ... Turvey	50	8.5	8.5	12.5	4	83.5
Townsend, C. A.	Saddleworth ..	= 13	Federation	46	9	9	12	4	80
Miller, G. A.	Farrell's Flat ..	= 13	{ Yandilla King .. Onas	48	6	9	12.5	4.5	80
Longbottom, O. E. ...	Riverton	= 15	{ President Sultan	43.5	9	9.5	13.5	4	79.5
Fuller, A. M.	Tarlee	= 15	{ Crossbred 53 ... Federation	50.5	8	8.5	9	3.5	79.5
Hill, A. T.	Tarlee	17	{ Crossbred 53 ... Queen Fan White Essex....	42.5	9	9.5	14	4	79
Humphrys, F.	Manoora	18	Nugget	47.5	8	8.5	11.5	3	78.5
McInerney, James...	Tarlee	19	{ Federation Queen Fan	45.5	8	8.5	12.5	3.5	78
Frost, L. W.	Saddleworth ..	20	Onas	42.5	9.5	9	12.5	3.5	77
Watts, Fred O.	Stockport	= 21	{ Ford Felix	42	9.5	7.5	14	3.5	76.5
Kelly, R. F.	Manoora	= 21	Nugget	45	9.5	7	12	3	76.5
Williams, E. J.	Tothill's Creek	= 23	Improved Federation	41.5	9.5	9	12	4	76
Williams, E. J.	Tothill's Creek	= 23	Federation	43	8	9	12	4	76
Humphries, Edward.	Tarlee	25	{ Ford Turvey	41	9.5	8.5	13	3.5	75.5
Molneux Bros.	Tarlee	26	King's White ..	39	9.5	7.5	14.5	4.5	75
Evans, Chas.	Tothill's Creek.	27	Federation	40.5	8	8	14	4	74

MIDLAND DISTRICT WHEAT CROP COMPETITION—*continued*.

Competitor's Name.	Address.	Position.	Variety.	Details of Judging.						Total.
				Ap- parent Yield.	True- ness to Type.	Free- dom from Disease.	Free- dom from Weeds.	Even- ness of Crop.		
				60	10	10	15	5	100	
Arnold, E. W.	Stockport	28	{ Teagle's..... Turvey..... Major.....	43	8	8	11.5	3.5	74	
Koth, C. B.	Stockport	29	{ Ford..... Major.....	41	8	9.5	12	3	73.5	
Coleman, F.	Saddleworth ..	30	Field Marshall ..	40.5	9.5	7.5	11	4	72.5	
Angas, Dudley T.	Clare	31	Federation	42	8	6.5	12.5	3	72	
Howard, Jesse	Stockport	32	{ Felix..... Major.....	40.5	5	9	12	4	70.5	
Shane, D.	Spalding	=33	{ Marshall's No. 3. Queen Fan..... Daphne.....	39	5.5	8.5	12.5	4.5	70	
Lock, Wm.	Riverton	=33	{ Warden..... Florence.....	41.5	8	9.5	7	4	70	
Hogan, P. J.	Giles Corner ..	=33	{ Sultan..... Crossbred 53..... Two Hundred ..	42	9	7	9	3	70	
Arthur, A. G.	Giles Corner ..	36	{ Turvey..... Crossbred 53..... Ford.....	40.5	8	9	8	4	69.5	
I'Anson, T. P.	Stoelton	37	Federation	39	8.5	9	9	3.5	69	
Bailey, W. G.	Farrell's Flat ..	38	{ Major..... Federation.....	35.5	8.5	8.5	12	4	68.5	
Vogt, Theo.	Saddleworth ..	39	Daphne	38.5	9.5	7	10	3	68	
Dee, J. M.	Tarlee	40	{ Federation..... Turvey.....	34	8	9	12.5	3	66.5	
Hannaford, F. G.	Riverton	41	Turvey	35.5	8.5	9	10	3	66	
Murray Bros.	Stockport	=42	Major	34.5	9	8.5	10	3.5	65.5	
Angas, Dudley T.	Clare	=42	Federation	34.5	8	7.5	13	2.5	65.5	
I'Anson, E. B.	Farrell's Flat ..	44	Federation	30.5	9	9	12.5	3.5	64.5	
Ashby, G. S.	Farrell's Flat ..	45	Federation	36	7	8.5	9	3	63.5	
Robbins, W. J. B....	Stockport	46	{ Indian Runner.. King's Early .. Ford.....	30.5	9	9	11	3.5	63	
Howard, G.	Stockport	47	{ Major..... Ford.....	33	7	8.5	11	3	62.5	
Stribbling, D. L.	Stockport	48	{ Turvey..... Felix.....	34.5	7.5	6	11.5	2.5	62	
Bray, E. R.	Clare	49	Improved Bluey ..	28.5	8	7.5	13.5	2.5	60	
Whitelaw, F. H.	Stockport	50	{ Currawa..... Major.....	26.5	9	9	11	2.5	58	
Heaslip, W. S.	Saddleworth ..	=51	{ Silver King..... Major.....	28.5	9	6	11	2.5	57	
Cooper, W. G. & C. M.	Farrell's Flat ..	=51	Federation	33.5	3	8	10	2.5	57	
Davis, H. A. & Sons ..	Riverton	53	Crossbred 53	27.5	4	9.5	10	3.5	54.5	

The next table sets out in detail the treatment as to seed and manure, etc., and the previous five years' history of the land on which each crop was grown.

MIDLAND DISTRICT WHEAT CROP COMPETITION, 1924—continued.

Name.	Address.	Position.	History of Field.				Seed per Acre	Superphos- phate per Acre.	Date of Seeding.
			1919.	1920.	1921.	1922.			
Frost, L. W.	Saddleworth	1	Fallow	Wheat	Oats & barley	Grass	140	140 (46%)	May 30
Frost, A. L.	Riverton	2	Fallow	Wheat	Fallow	Wheat	85	105 (48%)	June 3
Wardle, H. P.	Porter's Lagoon	3	Fallow	Wheat	Fallow	Wheat	75	95 (45%)	May 25
Schirmer, A. G.	Saddleworth	4	Wheat	Fallow	Wheat	Fallow	85	90 (guano)	June 15
McInerney, John	Riverton	5	Wheat	Fallow	Wheat	Grass	76	107 (45%)	June 4
Schunke, A. G.	Manoora	= 5	Oats	Fallow	Wheat	Oats	75	112 (45%)	June 6
Coleman, F.	Saddleworth	= 7	Grass	Fallow	Wheat	Grass	85	100 (45%)	June 27
Frost, W. T.	Manoora	= 7	Grass	Fallow	Wheat	Grass	76	112 (45%)	May 22
Torr, J. H.	Farrell's Flat	9	Grass	Grass	Grass	Wheat	80	90 (45%)	May 15
Clarke, D. L.	Tarlee	10	Grass	Fallow	Wheat	Grass	75	112 (45%)	June 25
Sanders, H. E. and J. H.	Tarlee	11	Grass	Fallow	Wheat	Grass	90	100 (38%)	June 12
Bedman, M. D.	Tarlee	12	Grass	Fallow	Wheat	Oats & Fallow	85	90 (45%)	June 12
Townsend, C. A.	Saddleworth	= 13	Fallow	Wheat	Fallow	Wheat	71	150 (48%)	June 25
Miller, G. A.	Farrell's Flat	= 13	Fallow	Wheat	Fallow	Wheat	75	100 (38%)	May 15
Longbottom, O. E.	Riverton	= 15	Wheat	Fallow	Wheat	Grass	80	120 (45%)	May 29
Fuller, A. M.	Tarlee	= 15	Wheat	Grass	Fallow	Wheat	84	115 (45%)	June 2
Hill, A. T.	Tarlee	17	Wheat	Wheat	Wheat	Fallow	85	138 (45%)	June 4
Humphreys, F.	Manoora	18	Grass	Fallow	Wheat	Grass	75	126 (38%)	June 1
McInerney, James	Tarlee	19	Grass	Grass	Grass	Grass	75	112 (45%)	June 12
Frost, Leo. W.	Saddleworth	20	Fallow	Wheat	Wheat	Grass	70	140 (46%)	May 28
Watts, Fred. O.	Stockport	= 21	Fallow	Wheat	Grass	Fallow	63	130 (45%)	May 30
Kelly, R. F.	Manoora	= 21	Fallow	Wheat	Oats	Grass	98	168 (45%)	May 30
Tothill's Creek	Tothill's Creek	= 23	Grass	Fallow	Wheat	Grass	75	112 (guano)	May 28
Williams, E. J.	Tothill's Creek	= 23	Grass	Fallow	Wheat	Grass	75	112 (guano)	May 8
Humphreys, Ed.	Tarlee	25	Fallow	Fallow	Wheat	Grass	70	112 (45%)	June 6
Moncur Bros.	Tarlee	26	Fallow	Wheat	Grass	Grass	95	121 (45%)	June 19
Evaus, Chas.	Tothill's Creek	27	Grass	Grass	Grass	Grass	75	100 (40%)	May 1

MIDLAND DISTRICT WHEAT CROP COMPETITION, 1924—continued.

Name.	Address.	Position.	History of Field.				Seed per Acre.	Superphosphate per Acre.	Date of Seeding.
			1919.	1920.	1921.	1922.			
Amold, E. W.	Stockport	28	Wheat	Fallow	Wheat	Grass	75	112 (38%)	May 20
Koch, C. B.	Stockport	20	Grass	Barley	Wheat	Oats	70	112 (guano)	June 14
Coleman, F.	Saddleworth	30	Grass	Fallow	Wheat	Grass	80	100 (45%)	May 27
Angus, Dudley T.	Clare	31	Grass	Fallow	Wheat	Wheat	90	95 (45%)	May 29
Howard, Jesse	Stockport	32	Wheat	Grass	Fallow	Wheat	70	90 (45%)	May 25
Shane, D.	Spalding	=38	Fallow	Wheat	Fallow	Wheat	75	78 (38%)	May 18
Lock, Wm.	Riverton	=33	Fallow	Wheat	Fallow	Wheat	82	100 (guano)	May 25
Hogan, P. J.	Giles Corner	=36	Grass	Fallow	Wheat	Grass	87	90	May 29
Arthur, A. G.	Steeleton	37	Fallow	Wheat	Barley	Wheat	98	95 (48%)	June 16
F'Anson, T. P.	Steeleton	38	Grass	Fallow	Wheat	Grass	87	112 (45%)	April 20
Bedley, W. G.	Farrall's Flat	39	Fallow	Wheat	Grass	Wheat	85	112 (38%)	May 7
Vogt, Theo.	Saddleworth	40	Fallow	Grass	Fallow	Wheat	75	112 (45%)	May 15
Dec, J. M.	Riverton	41	Wheat	Fallow	Wheat	Grass	70	80 (38%)	May 25
Hannaford, F. G.							68	120 (45%) and 10 lbs. superph.	May 7
Murray Bros.	Stockport	=42	Barley	Grass	Fallow	Wheat	75	120 (45%)	June 6
Angus, Dudley T.	Clare	=42	Wheat	Fallow	Wheat	Grass	90	96 (45%)	May 22
F'Anson, E. B.	Farrall's Flat	44	Fallow	Wheat	Fallow	Wheat	70	100 (40%)	June 15
Ashby, G. S.	Farrall's Flat	45	Fallow	Wheat	Fallow	Wheat	75	100 (45%)	June 31
Robbins, W. J. B.	Stockport	46	Grass	Fallow	Wheat	Grass	84	95	May 27
Howard, G.	Stockport	47	Fallow	Wheat	Fallow	Wheat	60	112	May 16
Starbbling, D. L.	Stockport	48	Fallow	Barley	Grass	Wheat	75	112 (38%)	May 31
Bray, E. K.	Clare	49	Fallow	Wheat	Fallow	Wheat	100	112 (45%)	April 23
Whiteley, F. H.	Stockport	50	Grass	Fallow	Wheat	Grass	75	90 (45%)	May 30
Headly, W. S.	Saddleworth	=51	Grass	Fallow	Wheat	Grass	90	130 (45%)	May 15
Cooper, W. G. and C. M.	Farrall's Flat	=51	Fallow	Wheat	Fallow	Wheat	76	90 (38%)	April 20
Davis, H. A. and Sons	Riverton	53	Fallow	Wheat	Fallow	Wheat	77	112 (45%)	May 7

THE COMPETING CROPS.

1. *Mr. L. W. Frost, Saddleworth* (Federation 48 acres, and Field Marshal 2 acres).—As the allotted marks show, this crop was on the day of judging an extremely good "competition" crop, because it not only promised a very heavy yield of grain, but showed every evidence of good farming methods having been practised. The Federation was much truer to type than is usual with this variety, and only contained a few plants of a taller variety, and odd plants of a wheat with woolly chaff. There were no patches affected with "take-all," hardly any "red rust," just a little "loose smut," and some "flag smut" on the Federation. There was no barley in either crop, and both were very clean, except for a sprinkling of oats. The evenness of the crop was reduced by a strip of "red" land across it where the yield will be a bit lighter. The rotation of crops being practised on this farm, viz., (1) fallow, (2) wheat, (3) oats and barley, (4) pasture, is quite a reasonable one for the conditions and helped towards Mr. Frost's success this year, but more than that the block of crop inspected shows every evidence of being on land thoroughly and properly cultivated, and some of the success was also due to the use of sufficient seed and an adequate application of superphosphate.

2. *Mr. A. L. Frost, Riverton* (Major 45 acres, and Federation 5 acres).—The highest points gained for "apparent yield" were secured by this crop, but the losses under the other headings were sufficient to bring it into second place. It was a very bulky crop, but was not very true to type, the Major containing a taller variety, a bearded kind, and some Huguenot, whilst the Federation was as much mixed as is the average crop of this variety, containing a lot of a taller wheat and some "bearded" plants. Both varieties contained a little "loose smut" and "flag smut," and the Federation was well spotted with "red rust," but otherwise the crops were free from disease. The weakest point in this, as a competition crop, was the presence of so many weeds, the oats being very bad, with a fair amount of barley, a lot of spear thistles, some cockspur, variegated thistles, soapwort, and a little drake and canary grass. This was a heavy, luxuriant crop, but really regular and even, and was an excellent crop spoiled by weeds and poor seed. Plenty of seed was used and a sufficient dressing of superphosphate applied, which helped towards the success secured.

3. *Mr. H. P. Wardle, Porter's Lagoon* (Major 30 acres, and Federation 20 acres).—This very fine wheat crop received the same number of marks for apparent yield as did the No. 1 crop, but it lost marks under all other headings except "evenness." The Major showed a lot of Federation plants, and the block of Federation was no purer than the average Federation of the State. Although there were no patches killed out by "take-all," there were a few plants affected by "hay-die" scattered through both blocks, "loose smut" and "flag smut" were present in both varieties, and the Federation showed a fair amount of "red rust." Of weeds, drake was plentiful in the Major, and a fair amount was in the Federation, but both blocks were very clean except for this and saffron thistle. The Major was a

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very even and regular crop, but the later heads were barren at the base, showing that they were caught at heading time; the Federation was a fairly even crop. Had better seed been used much improvement from a competition point of view would have resulted, because most points were lost through bad seed—lack of purity and presence of drake.

4. *Mr. A. G. Schirmer, Saddleworth* (Florence).—This crop of Florence showed the benefit of being grown on two years' fallow, and it was a very heavy regular crop. It was only fairly true to type; showed just a few isolated plants of "hay-die" and a few spots of "red rust," and, although on the whole a fairly clean crop, contained a lot of barley (both two-rowed and six-rowed), and some cockspur, sow thistle, poppy, and slender thistle, and an odd plant or so of wild oats. The crop had lodged in places, but was a nice even block of wheat. Good seed, eliminating admixture and barley, would have considerably improved this otherwise good crop.

—5. *Mr. John McInerney, Riverton* (Federation).—The crop submitted by Mr. McInerney was not so heavy as the preceding ones, but showed every evidence of good farming methods. It was much purer than the average Federation to be seen; contained very little disease except a little "flag smut" and "loose smut" and some "red rust;" was a fairly clean crop, free from barley, but contained a lot of cockspur and a sprinkling of oats, and, although showing some lighter patches, was fairly even.

—5. *Mr. A. G. Schunke, Manoora* (Nugget 40 acres, and Federation 10 acres).—The Nugget in this exhibit contained just odd heads of two other wheats, but was fairly true to type, and the Federation is the ordinary mixture. Besides some "flag smut" a little "loose smut" and "hay-die" plants in both varieties, the Federation showed a few "take-all" patches, and the Nugget a lot of "red rust." Both blocks were very clean, only containing isolated barley plants, a little drake, sheep weed, poppy, sow thistle, spear thistle, and oats. Each crop was even and regular. Much of the success of Mr. Schunke as a wheat grower appears to be due to the fact that he only has a small farm, carries a comparatively large number of livestock, and cultivates his land really well.

—7. *Mr. F. Coleman, Saddleworth* (Federation 30 acres, and Marshall's Pride 20 acres).—The plot of Federation was much nearer to type than is usual with Federation crops, but the other variety contained a fair sprinkling of a woolly-headed wheat and a lighter colored one. Both varieties showed some "flag smut," "loose smut," and "red rust," and the Marshall's Pride had patches of "take-all" in the centre of the block. Neither variety contained barley, and the Marshall's Pride was too thick and heavy for many weeds, but showed some burr clover and oats and a little canary grass and sow thistle, whilst the Federation contained a fair amount of canary grass and spear thistles, and a little sow thistle, soft brome, water grass, cockspur, and oats. The Marshall's Pride was a regular crop except for lodged patches and "take-all" patches, but the Federation was rather uneven in places, due to thin patches caused by poor germination.

— 7. *Mr. W. T. Frost, Manoora* (Federation 30 acres, and Major 20 acres).—Both varieties were fairly pure, containing but little admixture. "Flag smut" was in both varieties, and also a few small patches of "take-all," but although the Federation had a fair amount of "red rust," there was very little on the Major. Of weeds, oats were fairly bad in patches, and some drake, canary grass, spear thistle, sea barley, and water grass was to be seen, as well as very isolated barley plants. Major had made a very even crop, but the Federation was rather irregular.

9. *Mr. J. H. Torr, Farrell's Flat* (Federation).—This crop was grown on land which had been out to grass for some years before being fallowed in 1923. It was not very true to type, being about equal to the average for Federation. It showed a little "flag smut" and "loose smut;" the flag was well spotted with "red rust," and quite a lot of patches of "take-all" were present. It was a fairly clean crop, containing some drake and hedynois, a little woolly clover, hop clover, saffron thistle, and odd plants of barley, and would have been a very even crop but for the "take-all" patches.

10. *Mr. D. L. Clarke, Tarlee* (Crossbred 53 45 acres, and Major 5 acres).—Although the bulk of this crop consists of a "hay" wheat (Crossbred 53), it promises to give a heavy yield of grain. The small area of Major is nice and pure, but the other contains a fair amount of admixture. "Flag smut" and a little "red rust" were visible in both crops, whilst Major showed some "loose smut," and both varieties had a little "take-all." Other than the presence of some barley, these were fairly clean crops, but oats were plentiful in patches, and a little soapwort, canary grass, and barley grass were present. The main crop was fairly regular, although light on the "red" land; but the Major was tipped and was rather uneven.

11. *Messrs. H. E. & J. H. Sanders, Tarlee* (Late Gluyas 20 acres, King's White 20 acres, and Major 10 acres).—The crop of Major was extremely good, being better than the others; they were all fairly true to type. The King's White was much the worse as regards diseases, and showed "loose smut," a lot of "red rust," a little "take-all," and even a few heads of "bunt," whilst both of the others had a little "take-all," and the Major showed some "loose smut" and "flag smut." The Late Gluyas was very clean, but the others contained some barley, and all showed a little spear thistle, sow thistle, oats, variegated thistle, and barley grass. The crops were fairly even, despite the fact that the Late Gluyas and King's White had lodged in places.

12. *Mr. H. D. Badman, Tarlee* (Crossbred 53 35 acres, and Turvey 15 acres).—Both varieties contained some other varieties, but were fairly true to type. A fair amount of "take-all" was present in both varieties, as well as spots of "red rust," and the Turvey showed some "flag smut." On the whole, the crops were fairly clean, but the Turvey contained a fair amount of barley, and both varieties showed a fair number of sow thistles and a little oats, drake, variegated thistle, ox-tongue, burr, clover, and barley grass. The "take-all"

patches spoiled what would have otherwise been very regular crops. This would have been a very heavy hay crop, for which both varieties are more suited than the production of grain.

— 13. *Mr. C. A. Townsend, Saddleworth* (Federation).—This crop was shown in two fields, but both crops were truer to type than is average Federation. "Flag smut," "loose smut," and "red rust" were seen, as well as a few small patches of "take-all" and a few "hay-die" plants. Oats were really bad in this crop, and there was also a little canary grass, barley grass, silver grass, and isolated plants of barley. Although the crop was rather scanty on the water-runs it was fairly even.

— 13. *Mr. G. A. Miller, Farrell's Flat* (Yandilla King 35 acres and Onas 15 acres).—The Onas was fairly true to type, but the Yandilla King was badly mixed. "Red rust" was fairly plentiful on both kinds, and "flag smut" was bad on the Onas, but there were only a few plants affected with "hay-die." Barley was absent, but the crops contained a fair number of weeds, composed of drake, saffron thistle, oats, shivery grass, hop clover, cluster clover, woolly clover, Cape weed, silver grass, and sow thistle. The Onas was a bit patchy, but Yandilla King was nice and even.

— 15. *Mr. O. E. Longbottom, Riverton* (Sultan 30 acres, and President 20 acres).—The Sultan was very pure, but President contained a fair amount of a woolly-headed wheat, and a little of a taller one. Both varieties were fairly free from diseases, only showing "red rust" and a few plants of "hay-die" in both, and a little "loose smut" in the Sultan. Other than for oats the crops were nice and clean, but these were really plentiful in patches, and there was also noticeable a little soapwort, canary grass, burr clover, and charlock. The President was nice and even, but the Sultan was a little patchy.

— 15. *Mr. A. M. Fuller, Tarlee* (Crossbred 53 30 acres, and Federation 20 acres).—Neither variety was more than fair as regards trueness to type; they both contained a fair number of patches of "take-all." The Crossbred 53 showed just a little "flag smut" and a few spots of "red rust"; whereas the Federation had a lot of "red rust" and a fair amount of "flag smut." Both crops were fairly weedy with poppy, sheep weed, soapwort, brome grass, charlock, Cape weed, and sow thistle, and the Federation contained a lot of barley (2-rowed and 6-rowed). The Crossbred 53 was tipped and lodged badly in a number of places, and the evenness of the Federation was spoilt by "take-all." The Crossbred 53 was a heavy, rank crop for the most part, and the Federation was a good crop ruined by "take-all."

17. *Mr. A. T. Hill, Tarlee* (Crossbred 53 20 acres, Queen Fan 20 acres, and White Essex 10 acres).—The White Essex contained more admixture than the others, and as a whole the crop was fair. There was but little disease in any of the plots, except for a few small patches of "take-all" which were to be found in all of them. All were comparatively clean crops, but Queen Fan contained a few barley

plants, and throughout the others there was a little barley grass, soapwort, variegated thistle, saffron thistle, sow thistle, and oats. The crops were only fairly regular, particularly the Queen Fan.

18. *Mr. F. Humphrys, Manoora* (Nugget).—This crop was only fairly true to type, containing some of at least three other varieties. The flag was badly "rusty" and the sheaths were spotted; "flag smut" was fairly plentiful, and there were odd plants of "hay-die"; some barley was present as well as bad patches of oats, and some canary grass, sow thistle, sea barley, charlock, spear thistle, and drake, and odd plants of wild turnip. Parts of the crop were extremely heavy, but it was rather patchy.

19. *Mr. James McInerney, Tarlec* (Federation 40 acres, and Queen Fan 10 acres).—The Federation part of this exhibit was good, but the Queen Fan was really poor. The purity of varieties was only fair. The Federation showed a few "take-all" patches, as well as the other ordinary diseases; a little barley and some drake were in the Federation, otherwise it was fairly clean, showing only a little Salvation Jane, water grass, barley grass, some patches of oats, and a fair amount of hog weed, whilst the Queen Fan showed a fair amount of oats, Salvation Jane, and water grass. The crops were rather patchy.

20. *Mr. L. W. Frost, Saddleworth* (Onas).—Nice and true to type, this crop contained a fair amount of "red rust," some "flag smut," and a few "hay-die" plants, and although not a weedy crop otherwise, contained a lot of oats, and a little poppy, burr clover, charlock, rocket, sheep weed, and canary grass, and isolated barley plants. It was a rather patchy crop.

21. *Mr. F. O. Watts, Stockport* (Ford 25 acres, and Felix 25 acres).—Both varieties only contained a little admixture, but besides the diseases prevalent this season, and a little "hay-die," the Felix contained quite a fair amount of "bunt." Both plots were nice and clean, but contained odd plants of barley, and a little oats, spear thistle, sow thistle, variegated thistle, saffron thistle, burr clover, and hog weed. The Felix was fairly regular, but Ford was a bit patchy.

22. *Mr. R. F. Kelly, Manoora* (Nugget).—This true-to-type crop of Nugget was very "rusty," and showed a few patches of "take-all," as well as a little "flag smut." There was quite a fair amount of barley present, a lot of oats in patches and sea barley, and some drake, sow thistle, and canary grass. The crop was much lighter on high land and rather patchy.

23. *Mr. E. J. Williams, Tothill's Creek* (Improved Federation).—The crop was much truer to type than is the average crop of Federation; showed a few patches of "take-all," as well as some "loose smut" and "flag smut" and a good deal of "red rust." Other than oats, which were really bad, but few weeds were present, and these included an isolated plant or so of barley. This was a fairly even crop.

— 23. *Mr. E. J. Williams, Tothill's Creek (Federation).*—This crop showed the same admixture as the average Federation crop, and besides a lot of "red rust" and a few "take-all" patches, contained some "flag smut" and "loose smut." Oats were so bad that the crop was too thick for many other weeds to grow, but there was a little barley, some water grass and canary grass, and a little sheep weed and spear thistle. The crop was fairly even.

25. *Mr. Edward Humphries, Tarlee (Ford 30 acres, and Turvey 20 acres).*—Both varieties are nicely true to type, and they both carried some "red rust" spots on the flag. The Turvey also showed "loose smut" and a fair number of "take-all" patches, and Ford was affected with a little "flag smut." The whole crop was fairly clean, but as well as a few odd plants of barley in the Turvey, it contained a little variegated thistle, oats, sow thistle, spear thistle, sheep weed, barley grass, brome grass, burr clover, shepherd's purse, and charlock. The Turvey had lodged in many places, whilst other patches were thin, and some of the Ford was thin owing to poor germination.

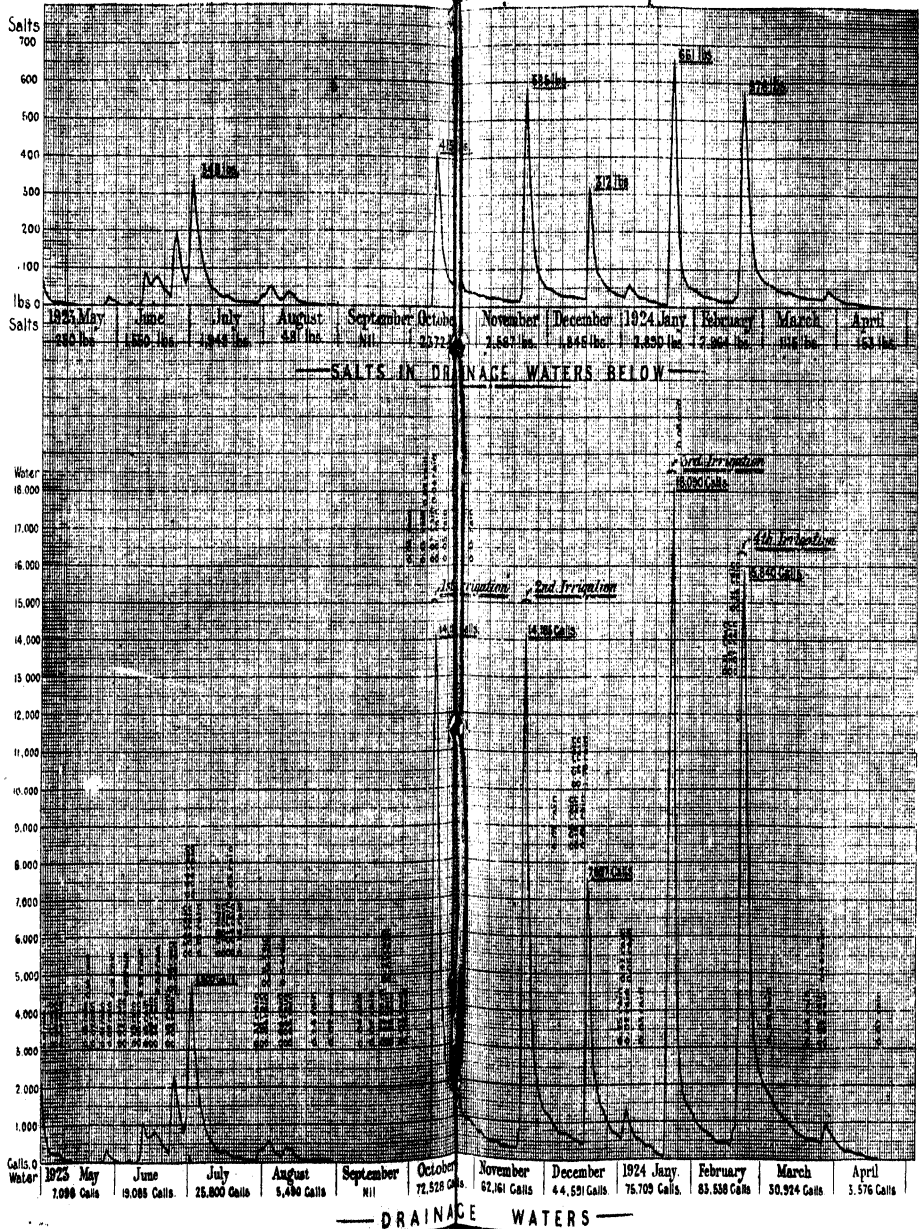
26. *Molineux Bros., Tarlee (King's White).*—A very nice crop of wheat, but too light to compete with many of the other exhibits. True to type, but containing a little "bunt" as well as a fair amount of "red rust," a little "loose smut," and a few plants of "hay-die." A nice, clean crop except for isolated plants of barley and a sprinkling of oats, as well as a little sheep weed and thistles. A very even crop, a bit lighter on the "red" land.

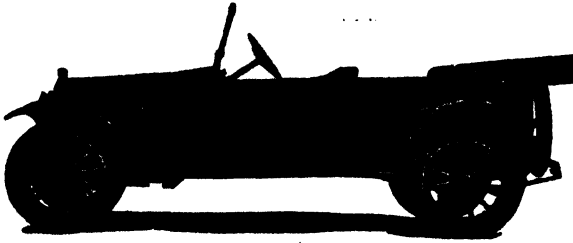
27. *Mr. Chas. Evans, Tothill's Creek (Federation).*—This Federation showed the usual varieties in admixture, and besides some "flag smut" and "loose smut," a lot of "red rust" and a fair number of "take-all" patches. It was a really clean crop containing just odd plants of barley, drake, spear thistles, saffron thistles, and silver grass, and was fairly even.

28. *Mr. E. W. Arnold, Stockport (Teagle's 25 acres, Turvey 15 acres, and Major 10 acres).*—The Turvey contained a lot of "strangers" and so spoiled the crop from this point of view. There were no "take-all" patches visible, but "hay-die" plants were in evidence, as well as "loose smut," "flag smut," and "red rust." Quite a fair amount of barley was present, and a lot of oats and some poppy, burr clover, charlock, canary grass, Cape weed, sheep weed, barley grass, and water grass. On the whole the crop was rather patchy.

29. *Mr. C. B. Koth, Stockport (Major 25 acres, and Ford 25 acres).*—Of these crops, the Ford was fairly true to type, but the Major contained a fair amount of other varieties. There was a little "loose smut" and "hay-die" in the Major, and a little "red rust" in both crops, otherwise they were fairly disease free. Other than some barley and a lot of oats there was not a lot of weeds, still there was a little burr clover, Cape weed, poppy, barley grass, catch fly, sheep weed, brome grass, and hard grass. The crop was rather patchy.

—GRAPH—
 Showing daily quantities of water and salt passing through
 Berri drains between 1st May 1923 and 30th April 1924





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30. *Mr. F. Coleman, Saddleworth* (Field Marshal).—This crop which was really true to type contained a lot of "take-all" patches, a lot of "flag smut," a fair amount of "loose smut" and "red rust." It was rather a dirty crop, showing oats very badly, a fair amount of poppy, burr clover, sow thistle, and some turnip, cockspur, spear thistle, canary grass, and sea barley, but was free from barley. This was a heavy, coarse crop just flowering, but was fairly even, except for "take-all" patches.

31. *Mr. Dudley T. Angas, Clare* (Federation).—This plot showed the varieties usually found in Federation, and besides some patches of "take-all," a little "flag smut" and "loose smut" and a good showing of "red rust" it contained a fair amount of "bunt." Thistles were plentiful—spear, saffron, slender, and sow—as well as some cluster clover and shivery grass and a little oats and sheep weed. The crop was rather patchy.

32. *Mr. Jesse Howard, Stockport* (Felix 25 acres, and Major 25 acres).—In the block of Felix some other variety had been drilled in strips, so the marks allotted for purity are low. Both varieties showed "red rust," particularly the Felix, whilst the Major also contained "loose smut" and "flag smut." Both crops were nice and free from weeds, except for a good sprinkling of barley in the Major, a little of it in the Felix, and a little charlock, burr clover, saffron thistle, and hog weed, and a few bad patches of oats in the two crops. The Major was a bit patchy and had "tipped" ears, and the bases of many heads barren, due to delayed heading.

— 33. *Mr. D. Shane, Spalding* (Marshall's No. 3 20 acres, Queen Fan 15 acres, and Daphne 15 acres).—The low marks given for trueness to type are largely due to the fact that the variety submitted at Marshall's No. 3 is a yellow strawed wheat and is more like Yandilla King than Marshall's No. 3. Queen Fan contained a lot of "take-all patches, as well as a fair number of "hay-die" plants. The Daphne was not quite so bad, but the so-called Marshall's No. 3 was free from patches of "take-all," but showed some "hay-die" plants. A little barley was seen in the Daphne, and a good lot of oats, soapwort, charlock, and poppy, and some sheep weed, saffron thistle, and drake between the different crops. All crops were fairly even.

— 33. *Mr. Wm. Lock, Riverton* (Warden 40 acres, and Florence 10 acres).—The Warden was fairly true to type, but the Florence was a very mixed lot. Both blocks were fairly disease free. Wild oats formed quite half of the crop, and besides there was a little barley, canary grass, and cockspur. Despite the oats the crop was fairly regular.

— 33. *Mr. P. J. Hogan, Giles' Corner* (Sultan 25 acres, Crossbred 53 18 acres, and Two Hundred 7 acres).—Each variety contained some strangers, but were not badly mixed. The Sultan contained quite a fair amount of "bunt" as well as "loose smut," and a good deal of "red rust," but the Two Hundred was just about disease free. Oats were really bad, and there were odd plants of barley, some soapwort.

variegated thistle, and canary grass, and a little sow thistle, barley grass, charlock, sheep weed, and cockspur. The crops were rather uneven.

36. *Mr. A. G. Arthur, Giles' Corner* (Turvey 20 acres, Crossbred 53 20 acres, and Ford, 10 acres).—Turvey and Crossbred 53 were just breaking into head, and Ford was just flowering, so much difficulty was experienced in attempting to judge this crop. All varieties were only fairly true to type. Turvey showed a lot of "loose smut," and some "flag smut" was on this variety and on the Ford, and the latter variety showed a little "red rust." The Ford was fairly clean, except for some barley and a fair amount of oats, but the other varieties were almost half and half oats, contained a lot of barley, and some drake, sow thistles, poppy, and soapwort. The crops were fairly even, except that Turvey had some thin patches, due to poor germination.

37. *Mr. T. P. I'Anson, Steelton* (Federation).—This crop was a little purer than average Federation. It showed "flag smut," "loose smut," a good deal of "red rust," and a few patches of "take-all." It was very dirty with oats and clovers (cluster, burr, woolly, and hop), and also had a fair amount of barley, some spear thistle, cockspur, Cape weed, silver grass, and sea barley, and a few dock plants. Despite all the weeds it was a fairly even crop. Extremely good stubble grazing will be available here after the crop is harvested, but this fact hardly helps the crop in a competition for grain crops.

38. *Mr. W. G. Bailey, Farrell's Flat* (Major 25 acres, and Federation 25 acres).—The Major was practically true to type, but the Federation had a strip of other wheat right through it. Both showed "loose smut," "flag smut," and "hay-die" plants. The "red rust" was much more plentiful on Federation than on Major, and Major contained a few patches of "take-all." The Major was rather dirty, and Federation had barley, the other weeds present in the exhibit being a lot of drake, saffron thistle, shivery grass, and sow thistles, and a little silver grass, Cape weed, and oats. Although the Major was a light crop both were fairly even.

39. *Mr. Theo. Vogt, Saddleworth* (Daphne).—This really true-to-type crop was fairly free from diseases, except "take-all," which was very plentiful, and this was possibly one reason why the crop was so dirty, containing a fair amount of barley, a lot of spear thistle and burr clover, and some woolly clover, hop clover, water grass, oats, sea barley, slender thistle, saffron thistle, sow thistle, artichokes, and charlock. "Take-all" also spoiled the evenness of the crop.

40. *Mr. M. J. Dee, Tarlee* (Federation 40 acres, and Turvey 10 acres).—The Federation was only as "true" as average Federation, and Turvey also contained a fair amount of other varieties. Both showed "red rust" and "loose smut," but Federation also had "flag smut." Both crops were fairly clean of weeds other than barley and oats, and only had a little of canary grass and saffron thistle. Major was fairly even, but on the whole the crop was a bit patchy.

41. *Mr. F. G. Hannaford, Riverton (Turvey).*—There were only a few plants of "strangers"—a little "loose smut," "flag smut," "red rust," and "hay-die" plants, and some patches of "take-all." The crop was dirty with a fair amount of barley, patches of oats, and hard grass, a lot of burr clover, cluster clover, woolly clover, and hop clover, and a little drake. Some patches of the crop were really heavy, but on the whole the crop was light. Good grazing will be available after harvesting this crop.

—42. *Messrs. Murray Bros., Stockport (Major).*—Very little admixture in this crop, but besides "flag smut" and a little "red rust" there were a lot of small patches of "take-all." The crop was dirty with a lot of sheep weed, oats in patches, poppy and charlock, and some hog weed, Cape weed, sow thistles, and variegated thistles. Some patches were very heavy, but crop was only fairly even.

—42. *Mr. Dudley T. Angas, Clare (Federation).*—This crop had the usual varieties found in Federation, and besides some "loose smut" and "flag smut" contained a little "bunt." A little barley was present as well as a little shivery grass, cluster clover, saffron thistle, oats, sheep weed, and slender thistle. It was a patchy crop.

44. *Mr. E. B. I'Anson, Farrell's Flat (Federation).*—Fewer "strangers" were found than is usual with Federation, and other than "flag smut" and a fair amount of "red rust" only odd plants of "hay-die" were seen. There were only isolated plants of barley, but some drake, catchfly, shivery grass, and saffron thistle, geranium, oats, and Cape weed in patches, a little charlock and woolly clover, and a lot of sow thistle. The regularity of the crop was spoilt by thin patches due to bad germination.

45. *Mr. G. S. Ashby, Farrell's Flat (Federation).*—There were strips of some other variety in this crop, and as well as some "loose smut" and "flag smut," and a fair amount of "red rust," there were a few patches of "take-all." Saffron and spear thistles were present in thick masses in parts of the crop, as well as some patches of oats and some canary grass and drake and isolated plants of barley. Many drowned-out patches were present, spoiling the evenness.

46. *Mr. W. J. B. Robbins, Stockport (Indian Runner 18 acres, King's Early 17 acres, and Ford 15 acres).*—Not many "strangers" were noticeable in any of the varieties; the King's Early was really "rusty," just a few patches of "take-all" were present in the Indian Runner, and a little "red rust" and a few "hay-die" plants were in the Ford. Other than a little barley and patches of wild oats the Ford was fairly clean, but there was a lot of barley in the King's Early as well as other weeds; and the Indian Runner was dirty with drake, water grass, oats, burr clover, spear thistle, sow thistle, ox tongue, and Cape weed. On the whole the evenness of the crops was fair.

47. *G. Howard, Stockport (Ford 30 acres, and Major 20 acres).*—Although the Ford was fairly true to type, the Major was very badly mixed; the Ford showed a little "red rust" and "loose smut," but

there were a lot of "hay-die" plants in the "Major," as well as "flag smut" and a little "red rust." The crops were dirty, containing barley, oats, canary grass, Cape weed, barley grass, charlock, poppy, sand rocket, sheep weed, soapwort, burr clover, and brome grass. The crop was fairly patchy.

48. *Mr. D. L. Stribling, Stockport* (Turvey 35 acres, and Felix 15 acres).—The Turvey contained a good lot of other wheats, but the Felix was fairly pure. Both varieties contained a fair amount of "bunt," as well as "loose smut" and "flag smut," whilst Felix had a good lot of "red rust" and a few "hay-die" plants; and Turvey, although not very "rusty," had some small patches of "take-all." The Felix was fairly clean except for a little barley and some oats, whereas Turvey contained a fair amount of barley and a lot of oats, and both varieties contained some of the following:—Barley grass, sheep weed, burr clover, poppy, silver grass, and Cape weed. The crop was patchy.

49. *Mr. E. R. Bray, Clare* (Improved Bluey).—There was a fair amount of a brown chaffed wheat present, and besides some "flag smut," "loose smut," and "red rust," there were a lot of patches of "take-all,"; the crop was fairly clean, containing a fair amount of cluster clover and hop clover, some sea barley, and a few plants of oats and drake; the crop was patchy.

50. *Mr. F. H. Whitelaw, Stockport* (Currawa 30 acres and Major 20 acres).—Both varieties were fairly true to type, and did not contain much disease, although Currawa showed some small patches of "take-all," as well as "hay-die," and a little "red rust," and the Major had "flag smut," and "hay-die,"; other than the presence of a lot of barley and some oats the crops were fairly clean, still, the following weeds were in evidence:—Cape weed, barley grass, sow thistle, canary grass, hard grass, silver grass, sea barley, spear thistle, and slender thistle; both blocks were patchy.

—51. *Mr. W. S. Heaslip, Saddleworth* (Major 30 acres, and Silver King 20 acres).—In these crops there was not much admixture, but they were good crops spoilt by a very bad attack of "take-all," and besides this disease they showed some "flag smut," "loose smut," and "red rust,"; the weeds were bad, very largely because of the great extent of "take-all" patches, and consisted of oats, charlock, sow thistle, burr clover, sheep weed, three-horned bedstraw, poppy, canary grass, and spear thistle; patchy crop due to "take-all."

—51. *Messrs. W. G. and C. M. Cooper, Farrell's Flat* (Federation).—The largest block of crop was very badly mixed with some other variety, and as well as "flag smut," and "loose smut," there was a fair amount of "red rust," and a good deal of "take-all,"; of weeds, barley was fairly prevalent, there was a lot of cape weed and sow thistles, some hop clover, woolly clover, cluster clover, drake, silver grass, and saffron thistle; the crop was patchy.

53. *Messrs. H. A. Davis and Sons, Riverton* (Crossbred 53).—There was a lot of admixture in this crop, but only a little “flag smut” and “hay-die”; weeds were bad, there being a sprinkling of barley, oats bad in places, and some barley grass, shepherd’s purse, sheep weed, cluster clover, burr clover, sow thistle, cockspur, drake, Salvation Jane, hedyppnois, geranium, and hard grass; it was a thin patchy crop.

OBSERVATIONS AND RECOMMENDATIONS.

The judging of so many crops in a district gives an unique opportunity to observe farms and farming methods, and to compare conditions and treatments. In this particular year it disclosed many very good crops, but at the same time many were seen that were a long way from good, and in a number of cases these poorer crops were the result of incorrect practices, or at all events to lack of attention to some details which must be attended to if anywhere-near-maximum crops are to be secured. The outstanding features of the farming of this particular district which need attention appear to be:—

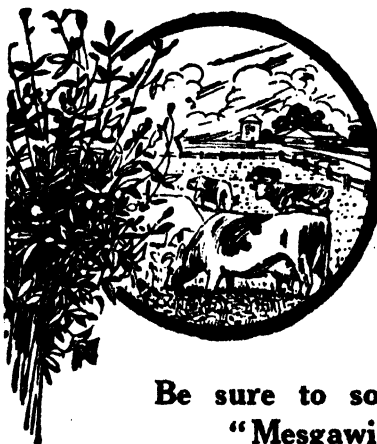
1. Increased numbers of livestock, and particularly sheep.
2. Use of more suitable varieties.
3. The growing of “unmixed” wheats and care of seed.
4. Reduction of amount of bad weeds, such as barley and drake.
5. Trying some other method of pickling wheat for the control of “bunt.”
6. Control of “take-all.”
7. Separating types of land.

1. *Increased Numbers of Livestock, and Particularly Sheep.*

Most of the district under review is essentially suited to livestock, but at the present time shows every evidence of being rather short of animals—many of the fields appear to have been over-cropped, edible weeds are plentiful in many crops, really good sheep-proof fences are very scarce, and there are comparatively few watering places on most holdings.

The improvement in agricultural practice which has, perhaps, done more than anything else towards reviving the agriculture of districts and countries where the soils have been over-cropped, has been the discovery of a rotation of crops which reduces the crops to be carted off the land to a minimum, and increases the livestock carried to the maximum. In crop-growing districts, such a change of farming methods has not only increased the profits from the land, but has had the effect of increasing the yield per acre of the crops grown originally. It certainly has had that effect in wheat-growing districts, and so much so that one of the stated rudiments of the principles of wheat growing is “to grow wheat successfully sheep must be kept,” and this does not mean that a few sheep on the farm will make a successful wheat grower of the owner, but it does mean that the more sheep kept the better will be the wheat crops.

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"Mesgawi" Berseem, the Great Winter Fodder Plant that has justly proven its title of "The Mortgage Lifter." Every farmer should avail himself of such a splendid business proposition—for surely, a plant that grows in Winter like lucerne in Summer is a proposition not to be lightly overlooked. Six excellent cuttings may be got in a single season. Can be pastured, cut for greenfeed, or made into very palatable hay.

**Be sure to sow Brunning's Genuine
"Mesgawi" for the results.**

GRASSES AND CLOVERS FOR PERMANENT PASTURE.

Subterranean Clover
Creeping Bent
Cocksfoot
Red Clover
Alsike

"Tarwel" Strawberry
Clover
White Clover
Machine Dressed Sweet
Clover

Italian Ryegrass
Perennial Rye Grass
Cluster Clover
Crested Dogtail
Cow Grass

The "Bolens" Power Hoe SAVES THE WAGES OF THREE MEN.

With the "Bolens" ONE MAN can do as much in a day as FOUR MEN under the old hand cultivation methods, and actually do it better. It is invaluable for the Market Gardener, the Seed Grower, and all engaged in intense cultivation. The running cost of this machine is about 2s. 6d. per day for petrol, the other upkeep being practically nil.

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64, ELIZABETH ST., MELBOURNE.

The following figures, obtained at Booborowie Experimental Farm in conditions very similar to much of the country under review, are averages for the nine-year period, 1915 to 1923, and should be interesting:—

A. Bare fallow—Wheat:

Wheat—29bush. 58lbs. per acre.

B. Bare fallow—Wheat—Pasture:

Wheat—31bush. 39lbs. per acre.

Pasture—3.12 sheep per acre per year.

C. Bare fallow—Wheat—Peas:

Wheat—33bush. 34lbs. per acre.

Peas—3.20 sheep per acre per year.

D. Bare fallow—Wheat—Rape:

Wheat—32 bush. 24lbs. per acre.

Rape—2.69 sheep per acre per year.

E. Bare fallow—Wheat—Barley—Pasture:

Wheat—31bush. 54lbs. per acre.

Barley—25bush. 27lbs. per acre.

Pasture—2.33 sheep per acre per year.

F. Bare fallow—Wheat—Oats—Pasture:

Wheat—33bush. 46lbs. per acre.

Oats—32bush. 2lbs. per acre.

Pasture—2.59 sheep per acre per year.

G. Bare fallow—Wheat—Lucerne—Lucerne—Lucerne:

Wheat—33bush. 0lbs. per acre.

Lucerne—3.36 sheep per acre per year.

H. Bare fallow—Wheat—Rye grass—Rye grass:

Wheat—29bush. 52lbs. per acre.

Rye grass—3.37 sheep per acre per year.

As well as a great many farms requiring more livestock if maximum crops are to be secured, there are a good number of holdings in the district with soils much too good to be growing wheat as a main crop. Those farms situated where the average rainfall is over 20 inches per annum, and where the soils belong to those types between (a) true chocolate color and of a friable nature, and (b) bluish-black to black color, are essentially suited to the production of livestock, and crops to be carted off the land should occupy a secondary place in the farming operations, rather than be the most important as applies in most cases at present. To change the farming practices will, of course, involve much fencing and the provision of many watering places, but all other work will be considerably reduced, profits should be increased, and a much easier and more interesting life will result. For livestock farming in such conditions either of the above rotations marked G or H could be practised,

and the wheat crop would be cut for hay to be fed on the farm. Another rotation quite workable would consist of:—

Lucerne for four years—to be cultivated at least once each year, and to receive from 1cwt. to 1½cwt. superphosphate (45 per cent.) per acre per year.

Wheat or Oats or a mixture of the two to be grown for hay without a preceding fallow; this hay to be fed on the farm.

Italian Rye Grass for two years, to be seeded in the autumn on the hay stubble with 2cwt. superphosphate per acre at seeding.

Such a rotation would mean that 4/7ths of the farm would always be under lucerne, 1/7th under hay, and 2/7ths under rye grass, and each season 1/7th would be sown with lucerne, 1/7th with hay, and 1/7th with rye grass.

2. Use of More Suitable Varieties.

Although many of the crops submitted in the competition were extremely good, there were some which were not good grain-producing varieties, and could be replaced with advantage. Many of the wheats entered are essentially "hay" wheats (as was to be expected because parts of the district have been producing cereal hay for years), but other varieties are neither one thing nor the other. In this connection the average results secured at Booborowie Experimental Farm for the seasons 1919, 1920, 1921, and 1923 may be useful:—

Major	34bush. 15lbs. per acre
Yandilla King	32bush. 45lbs. per acre
Caliph.	30bush. 30lbs. per acre
Onas	29bush. 36lbs. per acre
King's White	27bush. 39lbs. per acre
Federation.	27bush. 26lbs. per acre
Gluyas	27bush. 26lbs. per acre
Leak's Rustproof	27bush. 7lbs. per acre
Queen Fan	26bush. 54lbs. per acre
Marshall's No. 3	26bush. 24lbs. per acre
Crossbred 53	21bush. 0lbs. per acre

For this particular district the following varieties should be suitable grain producers:—

Main Crop.—Major, Federation, Yandilla King, Caliph, Ford.

Grain or Hay.—Leak's Rustproof, Marshall's No. 3, President.

Early Varieties.—Gluyas, Sultan, Felix.

3. The Growing of "Unmixed" Wheats and Care of Seed.

It is usually understood that using first-class seed is a good business proposition, but the crops exhibited showed little evidence of good seed having been used. Where 20bush. crops of wheat can be secured, the mere grading of the seed of suitable varieties means an extra yield of from 2bush. to 3bush. per acre on the average, and when field selection as well as grading seed is practised the increase is still greater. Further, the fact of growing wheat true to type means an increased return, and as the plants ripen at the one time less difficulty at harvest

time. There is room for a great deal of improvement in this connection, and as it will increase the returns should be seriously considered.

4. *Reduction of Amount of Bad Weeds, such as Barley and Drake.*

Barley and drake are very bad weeds, which make a plant very similar to the wheat plant, and as such reduce the yield of wheat by replacing wheat plants. Also, the presence of much barley or drake grains in with the harvested wheat leads to a "dock" being put on the grain when it is submitted to the buyer, and the reduced yield and lowered price often means a considerable loss to the grower. Other than a little grain passed through the horses doing the seeding work, practically all barley and drake is sown at the same time as the wheat, and if care is shown with the seed used very little of these bad weeds will be seen.

5. *Trying some other Method of Pickling Seed for the Control of "Bunt."*

The two well-known pickling solutions—bluestone and formalin—are quite effective in the control of "bunt" when properly handled, and anyone who does not succeed in eradicating this disease from their wheat crops by using these "pickles" should try some other method. For some years now experiments have been conducted in most of the wheat-growing countries of the world, testing the effectiveness of dusting the seed wheat with finely powdered copper carbonate for the control of "bunt." These experiments have shown "dry" copper carbonate to be a fairly effective fungicide for the control of "bunt," provided (a) the material is so finely ground that about 90 per cent. of it will pass through a 200-mesh screen, (b) 2ozs. of fine copper carbonate containing 50 to 55 per cent. metallic copper be used to each bushel of seed, (c) the copper carbonate dust and the wheat be thoroughly well mixed together.

The advantage of the "dry" copper carbonate treatment over the ordinary "wet" methods is that the germination of the grain is not interfered with nor is the early growth of the wheat plants delayed. Seed treated in this way germinates, and makes very strong "early" growth in exactly the same manner as does unpickled seed.

The chief disadvantage of using copper carbonate is that the powder is of a corrosive nature, and if inhaled by human beings leads to serious irritation of the membranes. This danger necessitates the use of a dustproof machine for the treatment of the seed, and operators should wear a dust mask, or at least place a wet handkerchief over nose and mouth. Machines for mixing copper carbonate with the seed wheat are on the market, and most suppliers of farmers' requisites now stock copper carbonate, so that anyone who is not too successful in controlling "bunt" can easily secure everything to enable him to try this comparatively new method. Anyone possessing a box churn not in use for buttermaking has a good dustproof "pickler" at hand, and the farmer who likes using carpenter's tools can easily construct a dusting machine on the same principle as the box churn, and in such a rectangular box there is no need to put mixers or stirrers, because

the mere falling of the grain from side to side as the box is slowly revolved very thoroughly mixes it.

The pickling can be done at any time between harvest and seeding, and the seed can be sown when the soil is either "wet" or "dry" in the same way as with "unpickled" seed.

6. *Control of Take-all.*

Although it is only occasionally now-a-days that "take-all" does much damage in this district, there was quite a lot of the disease present this year, and such occurrences should be taken as a reminder that the spores of the fungus are always present, awaiting favorable conditions for their development to do damage to the wheat plants. Anything which tends to check or hinder strong, healthy growth in the early stages of the life of the wheat plant appears to enable the fungus to make sufficient headway to seriously injure the plants attacked. The main factor tending to check the young growth of wheat plants appears to be excessive looseness of the soil, and everything possible should be done to see that the underlayers of the soil are well compacted together. In ordinary seasons in this district no matter how the land is cultivated at seeding time there is usually sufficient steady rain in the early part of the winter to pack the land together firmly and regularly, but in seasons similar to this particular one, when there is a rush of fairly heavy rain at the opening of the season, followed by a dry period in the early winter, the surface of the soil to a depth of 1in. or so becomes very firm and compact, but below this layer it remains loose and friable, and this loose layer appears to check the growth of the young wheat plants, so enabling the "take-all" fungus to become well established. In every case noted this year, if plants were pulled from the "take-all" patches, they came away with about 1in. of compact, hard soil, and below that the soil was very crumbly, whereas any healthy plants pulled from outside the edges of "take-all" patches, if they did not break off at the surface, removed lumps of solid soil to a depth of 3in. or even 4in.

To reduce the chances of an attack of "take-all" all cultivations given to fallowed land from November onwards to seeding time should be very shallow, and particularly the one given immediately before the drill or with the combine.

7. *Separating Types of Land.*

Most of the holdings in this district contain two or more types of soil, and nearly all are composed of patches of (1) chocolate-colored friable soil and (2) red-colored compact soil. In many cases these patches are rather small, and are mixed together in about equal proportions in every field, but in some cases it is not so, each type occupying fairly considerable areas, or at all events having fairly considerable areas where one type predominates over the other. As these two types of soil need very different treatment as to cultivation, time of seeding, variety, rate of seeding, &c., if the best is to be got out of them, more should be done towards separating them in different fields, or at least to seed them separately.

DRY OR WOODY ORANGES.

[By C. H. BEAUMONT, Orchard Instructor and Inspector.]

A "dry" orange is a great disappointment to the buyer. It is also a disappointment to the grower, and, further, it is a very serious setback to the trade. A purchaser who pays 3d. or 4d. for what he considers is a fine, juicy fruit is not likely to try again when he finds that all he has received is an orange skin containing a quantity of woody, fibrous material. The vendor cannot be blamed, because, in appearance, the woody orange is as good as a juicy one. The result is that the whole of the orange-growing districts suffer—merchants do not care to deal in their produce. Growers who value their trade will, as a rule, not seek to deliver useless fruit; but some will sell an inferior class of produce, and so destroy the good name of their district. This may be from want of knowledge, but often it is deliberate, and must be checked.

The Californian regulations governing the sale of citrus fruits will not permit of the sale of "frosted" or "dry" oranges. Packing sheds receiving fruit after a freeze always separate the dry, or woody, or frosted fruits before packing.

It has been found that frost injures some of the fruits, whilst others on the same tree may escape injury. Navel varieties are more susceptible than the seeded, whilst mandarins and lemons are still more tender. Frosted oranges can sometimes be detected by marks on the skin, but this is uncertain; however, there is a definite difference in the specific gravity of the good fruit and the frozen fruit. The specific gravity of good fruit may be taken as about .876 to .936, whilst that of frozen fruit is .850 to .820. Keeping the fruit after a frost, either in store or on the tree, accentuates the difference. By keeping, a good fruit becomes reduced in size and thinner in the skin, but a frosted fruit increases in size and thickness in the skin. The contained juices also alter very much as to sugar contents. The specific gravity becomes greater in the one and less in the other.

This difference in specific gravity is the basis of the method of separation. The first attempts at separation were by the use of alcoholic fluids, and these are still necessary for lemons. Afterwards Mr. Frank Chase, a grower, of Riverside, California, devised a method of separation in a running stream of water. The fruits are carried in single rows and dropped from a height of 6in. to 10in. into water moving at a regular speed. The injured light oranges do not sink very deeply, and quickly come to the surface, so that they are only carried a short distance before they come to the top of the water. The good, heavy fruits sink more deeply, and are carried along under water much further. Screens placed horizontally at set distances apart will intercept the various layers of floating fruit, and assist it to the surface, whence it is at once removed. Mr. Chase patented his device, but gave his work free to his fellow growers.

Different times of picking will need the rearrangement of the screens in the separator; but there is no doubt of the results. Practically all fruits received after a freeze go through these separators, and an examination of such separated fruits testify conclusively to the value and effectiveness of this method of separation.

There are various designs of this separator, some for dealing with large quantities, others for little lots. Some move the water by using a small propeller, others move the fruits along in the trough by means of paddles; but the work can be done in gently running water, which can be pumped back or allowed to run free if more convenient.

Various devices have been perfected for heating the trees to prevent damage by frost, and large districts are so equipped; but this method would be very costly here.

There is a splendid opportunity for a district working on a co-operative principle to give a guarantee of their pack, and thus secure sure sales at best prices.

Of course, there are other reasons for oranges becoming dry; these are unsuitability of soil, or allowing fruits to hang too long, &c.; but mostly the cause is a freeze.

In districts where "brown rot" prevails the fruit must be dried before packing, and the addition of a small quantity of bluestone to the water is recommended. The water separator does not work well with lemons, because of their shape, hence other fluids are necessary.

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ORCHARD NOTES FOR SOUTHERN DISTRICTS FOR JANUARY, 1925.

[By C. H. BEAUMONT (Instructor and Inspector.)]

The main work for the month is harvesting the fruit. This in the past has been the least thought of work the orchardist does; one is astounded at carelessness displayed by pickers and packers in handling the fruit and serious loss of money must result. Retailers suffer loss by bruised fruits and pass the loss on to the consumer, and so the consumer pays high prices and the grower gets low prices. Only good fruit well graded should be sent to market, the other can be processed or sent to the jammakers. Drying plants should be ready for use if needed, and no fruit should be wasted.

Those who intend to export should see that their cases are right for the work, and then make sure of the procedure so that there is no delay when shipping. Whether we can hold our interstate trade is doubtful, grading and description of much of the fruit sent last season left so much to be wished for.

Curculio beetle may become troublesome this month; use arsenate of lead, 1lb. to 8galls. of water, or use zinc bands and traps with oil; keep soil about the trees loose and fine. Keep a coat of arsenate of lead on all pip fruits until near picking time; this spray will also stop pear or cherry slug. Spray the cherry trees when fruit is off.

Fungous diseases are bad this year, and nothing can be done at present with fruit, but with vines it will be necessary to use Bordeaux mixture to prevent the spread of downy mildew. This fungus has already taken off many grapes and got a hold in every part of the district.

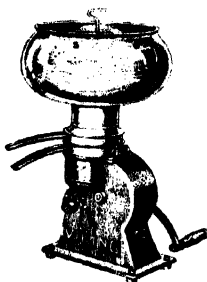
Woolly aphid is difficult to deal with now unless the heat takes it off, but if it is very bad use black leaf 40 with soap and a strong jet. The price is now very reasonable, and 1 pint will make 100galls. of spray. For small patches a little kerosine applied with a brush will be of use.

Budding may be undertaken; use healthy buds from known trees and only work good stocks. The instructor in your district will help you if you are in doubt about how it is done.

NARRUNG HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR OCTOBER, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.		Butterfat.	
			Per Herd during October.	Per Cow during October.	Per Herd during October.	Per Cow during October.
5/A	70-16	55-03	Lbs. 29,915-5	Lbs. 426-38	Lbs. 1,300-40	Lbs. 18-53
5/B	28-10	26-48	17,211-5	612-51	836-53	29-77
5/C	18	18	16,414-5	911-92	726-51	40-36
5/D	39-55	37-35	21,668	547-86	1,075-26	27-19
5/E	55-26	52-84	38,917-5	704-26	1,711-69	30-98
5/F	24-35	22-58	18,991-5	779-94	820-34	33-69
5/G	21	18-68	13,032	620-57	571-49	27-21
5/H	36	27-45	14,664-5	407-35	725-89	20-16
5/I	37	36-03	23,900	645-95	1,051-01	28-41
5/J	42	37-74	20,985-5	499-64	953-67	22-71
5/K	50	48	27,280	545-60	1,194-08	23-88
5/L	34-42	34	21,653-5	629-09	890-21	25-86
5/M	23	20	12,059	524-30	540-56	23-50
5/N	28-55	25-10	20,847	730-19	930-81	32-60
5/O	41-23	34-68	22,088	535-72	977-29	23-70
5/P	36	34-39	22,731-5	631-43	1,133-74	31-49
5/Q	30	27	16,151	538-37	797-77	26-69
5/R	69	52	19,375	280-80	845-54	12-25
Means	37-98	33-74	20,993-64	552-77	949-04	24-99



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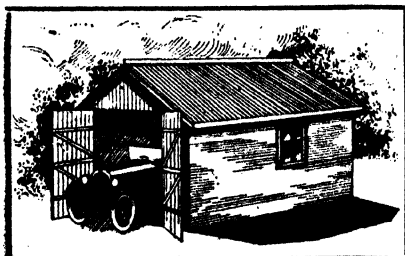
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GLENCOE HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR NOVEMBER, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during November.	Per Cow during November.	Per Cow October to November.	Per Herd during November.	Per Cow during November.	Per Cow October to November.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
3/A	17	16.33	17,850	1,050.00	2,116.68	692.38	40.73	81.55
3/B	17.60	11.03	8,557	486.19	872.37	335.15	19.04	34.29
3/C	12	11.87	12,056	1,004.67	2,111.71	458.39	38.20	76.88
3/D	11	8.97	8,737.5	793.11	1,383.82	301.13	27.33	49.77
3/E	17	14.07	13,197	776.29	1,635.85	535.67	31.51	64.32
3/F	12	12	10,875	906.25	1,764.62	419.95	35.00	68.93
3/G	13	10	8,310	639.23	1,290.25	287.60	22.12	44.37
3/H	13	11	12,180	936.92	1,805.87	474.23	36.48	70.43
3/J	20.70	19.30	14,479.5	701.04	1,241.44	564.46	27.32	47.12
3/K	24.37	18.07	17,284	709.23	1,397.43	704.49	28.91	56.53
3/L	23.13	19.63	14,507	627.19	1,314.79	582.96	25.20	52.23
3/M	14	12	8,505	607.50	1,297.92	348.94	24.92	50.93
3/N	20.67	18.43	15,112	731.11	1,412.90	607.61	29.40	55.80
3/O	16.2	10.93	10,264	633.58	1,190.38	377.09	23.28	43.87
3/P	18.4	16.03	14,355.5	780.19	1,487.12	544.22	29.58	54.72
3/Q	39	28.73	26,116	669.64	1,286.33	1,069.36	27.42	51.60
3/R	17	17	15,345	902.65	1,992.69	715.88	42.11	88.11
3/T	20.73	20.73	22,195	1,070.67	2,216.90	955.10	46.07	92.47
3/U	18.4	12	11,211.5	609.32	1,216.56	432.22	23.49	43.90
3/V	16.07	13.50	9,667	601.55	1,128.58	389.47	24.24	44.23
Means	18.06	15.08	13,540.20	749.58	1,485.61	539.82	29.88	58.18



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RIVER MURRAY HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR NOVEMBER, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during November.	Per Cow during November.	Per Cow October to November.	Per Herd during November.	Per Cow during November.	Per Cow October to November.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1/J	17	12.63	9,963.5	586.09	1,188.60	401.34	23.61	48.85
1/L	18.97	13.57	8,974	473.06	1,066.39	362.51	19.11	45.74
1/M	18.63	17.60	11,566	620.82	1,192.68	610.85	32.79	62.98
1/E	19.93	19.50	10,776	503.01	1,247.87	465.86	21.73	53.79
1/G	24	21.9	20,448	852.00	1,776.19	784.64	32.69	66.95
1/T	14	9.87	6,419	458.50	1,047.25	317.82	22.70	54.13
1/X	18.53	15.67	13,314	718.51	1,285.68	574.22	30.99	58.41
1/Ee	21.7	17.97	11,977.5	551.96	949.56	502.38	23.15	41.82
1/Ff	16	14	12,225	764.06	1,449.78	528.77	33.05	64.55
1/Gd	23	15.57	13,590	590.87	915.33	589.33	25.62	40.49
1/Ii	17.13	15.57	13,873.5	809.89	1,696.71	602.09	35.15	73.17
1/Jj	18	15.47	9,339	518.83	1,072.10	419.36	23.30	50.22
1/Mm	24.13	11.10	6,795	281.60	553.10	300.57	12.46	25.78
1/Nn	16.93	14.93	12,571	657.60	1,624.62	494.01	25.83	63.91
1/Oo	17.60	16.60	12,003	681.99	1,375.62	538.09	30.57	63.76
1/Pp	22.3	11.3	10,043.5	450.38	868.95	356.27	15.98	31.57
Means	19.24	15.20	11,492.37	597.30	1,200.53	490.51	25.49	52.34

MOUNT GAMBIER AND DISTRICT HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR NOVEMBER, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during November.	Per Cow during November.	Per Cow August to November.	Per Herd during November.	Per Cow during November.	Per Cow August to November.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
2/K	26.30	19.27	18,845	716.81	2,166.99	800.64	30.45	89.58
2/L	23.13	19.47	15,545.5	672.09	2,253.62	665.71	28.78	98.38
2/V	23.93	17.77	13,202.5	551.04	1,590.80	517.50	21.75	64.38
2/Y	12.97	12.83	12,507.5	964.34	3,470.17	534.29	41.19	141.17
2/Dd	20.87	20.27	19,360	927.65	3,787.38	768.57	36.83	163.75
2/Ee	13	13	11,100	853.84	3,402.15	466.46	35.88	150.23
2/Ff	11.13	11.13	10,960	984.72	3,841.10	453.36	40.73	162.86
2/Gg	12	11	7,605	633.75	2,750.12	294.34	24.53	111.96
2/Hh	11	10.17	9,677.5	879.77	3,527.72	363.62	33.06	135.91
2/Ii	11	11	10,170	924.54	3,601.46	397.44	36.13	153.06
2/Jj	28.03	27.07	17,865	637.35	1,907.79	686.21	24.48	72.81
Means	17.58	15.73	13,348.91	759.40	2,788.70	540.74	30.76	115.48

MILANG HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR NOVEMBER, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.		Butterfat.			
			Per Herd during November.	Per Cow during November.	Per Cow May to November.	Per Herd during November.	Per Cow during November.	Per Cow May to November.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
4/A	26-10	23-90	10,685	409-38	3,491-42	482-71	18-49	151-15
4/B	39-50	34-10	16,689	422-51	3,286-05	709-04	17-95	128-23
4/C	28-60	27-07	14,614-5	511-00	2,663-82	631-99	22-10	107-24
4/D	23	22	15,150	658-69	5,570-42	602-56	26-20	212-08
4/E	20	18-6	7,053	352-65	3,253-84	299-77	14-99	123-65
4/F	20	17-87	8,487	424-35	2,935-58	358-45	17-92	125-12
4/G	27	22-3	10,245	379-44	2,872-40	441-17	16-34	112-05
4/H	29-67	25-93	19,236	648-33	3,469-12	765-08	25-79	142-27
4/I	28-90	26-87	14,611	501-34	2,954-63	662-39	22-73	129-41
4/J	48-63	41-33	36,726	755-21	3,057-26	1,440-61	29-62	113-44
4/K	15-37	13-83	5,721	372-22	2,873-09	259-97	16-91	126-61
4/L	30-07	26-60	12,338-5	410-33	2,673-29	613-97	20-42	124-83
4/M	22-63	21-63	9,702	428-72	3,031-22	394-94	17-45	118-37
4/N	42	40	22,095	526-07	4,261-24	898-23	21-39	166-84
4/O	43	42-3	23,100	537-21	4,829-89	971-04	22-58	197-03
4/P	63	56-8	24,086-5	382-32	1,992-29	959-82	15-24	76-01
4/Q	49-4	38	30,101-5	609-34	2,881-08	1,197-68	24-24	114-22
4/R	15	13-97	8,336	555-73	3,828-85	400-00	26-67	174-99
4/S	21	20	9,750	464-29	1,894-43	452-61	21-55	85-80
Means	31-20	28-06	15,722-47	503-87	3,300-11	660-11	21-15	133-44

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J. W. MCGREGOR.

Pastoral and Agricultural Inspector
 Manager

CHARLES GRIEVE.
 E. W. WILLIAMSON.

22. GREENFELL STREET

ADELAID

ADVISORY BOARD OF AGRICULTURE

The monthly meeting of the Advisory Board of Agriculture was held on Wednesday, December 10th, there being present Mr. W. S. Kelly (Chairman), Capt. S. A. White (Vice-Chairman), Professor Arthur J. Perkins (Director of Agriculture), Messrs. A. M. Dawkins, C. J. Tuckwell, W. J. Colebatch, B.Sc. (Agric.), M.R.C.V.S. (Principal of the Roseworthy Agricultural College), F. Coleman, H. Wicks, P. H. Jones, J. W. Sandford, A. B. Feuerheerdt, and the Secretary (Mr. H. J. Finnis).

Apologies were received from Hon. W. G. Duncan, M.L.C., Col. Rowell, and Mr. H. S. Taylor.

Climatological Stations on River Murray.—The Minister of Agriculture intimated that the suggestion of the 1924 Annual Congress that official climatological stations should be established at suitable centres on the irrigation areas, especially in the fruit growing areas of the River Murray, had been submitted to the Prime Minister for his consideration.

Connecting Government Farms with Telephone.—The recent Conference of Eyre's Peninsula Branches asked that the Government farm at Minnipa should be connected with the local telephone exchange. The resolution was forwarded to the Minister who stated that he did not approve of the expenditure.

River Flats as Forestry Reserves.—At a previous meeting of the Board it was decided to ask the Government to proclaim unalienated red gum and box gum flats adjacent to the River Murray as forest reserves. The Minister intimated that no action could be taken at present.

Lectures in Beekeeping.—The Minister of Agriculture informed the Board that no action could be taken at present in connection with lectures on beekeeping to Branches of the Bureau.

Irrigation Experiments at Tantanoola.—In connection with the establishment of an irrigation experimental plot at Tantanoola information was received from the Secretary of the local Branch that Mr. W. Warren had offered to place 10 acres of land at the disposal of the Department. It was decided to ask the Director of Agriculture to report on the offer of the Branch.

Resolutions from 1924 Annual Congress.—(1) Circulating Agricultural Library. Congress resolved, "That the Advisory Board be requested to make provision for an agricultural library, the volumes of which may be circulated amongst members conditionally on the Branch paying cost of transport." The Board decided that the Government be asked to encourage Branches to establish libraries by subsidising £1 for £1 up to an amount of £5 to any one Branch for the purchase of books, the maximum amount to be expended in this manner to be limited to £50 annually. (2) Construction of New Roads

—“That the Government be urged to construct more new roads to serve primary producers.” The Secretary was instructed to bring the matter under the notice of the District Councils’ Association. (3) “That the Government should introduce legislation to fix a maximum profit on cornsacks, or alternately import cornsacks or publish in the *Journal of Agriculture* monthly the overseas and local prices of cornsacks.” It was decided that the resolution should be forwarded to the Minister for his information. (4) Seed Wheat Distribution—“That the Government adopt the New South Wales system of distribution of seed wheat.” The Board decided to refer the resolution to the Director of Agriculture with the suggestion that he might consider the possibilities of adopting the principle of the New South Wales system, working it in conjunction with the Crop Competitions and the Government Experimental Farms. (5) Rail Carriage of Dried Fruit—“That dried fruit be carried on the railways at the same rate of freight as wheat.” The Board appointed the Chairman and the Secretary to wait on the Chief Railways Commissioner for Railways and discuss the proposal. (6) Investigation of Flag Smut—“That flag smut be included in the investigations of the fungus ‘take-all’ that are taking place at the present time.” It was decided to ask the Director of Agriculture to arrange with the University authorities for the Lecturer in Plant Pathology to undertake investigation of the disease. (7) Cool Storage Charges—“That the Minister of Agriculture be requested to endeavor to secure a reduction in Government cold store charges.” It was decided to refer the matter to the Minister for his information. Resolution from Congress of Women’s Branches:—(8) Domestic Economy and Medical Instruction—“That the Department of Agriculture add to its staff some experts who could give practical demonstrations to our Branches, particularly a woman doctor to give health talks, and an authority on domestic science.” The Board approved of the idea, but considered that the time was not yet ripe for action as suggested.

Investigation of Animal and Plant Diseases.—The Conference of Eyre’s Peninsula Branches resolved—“That the Government should be asked to take steps to provide for the systematic investigation of animal and plant diseases.” The investigation of animal diseases was at present being considered by a committee of the Board. As to the plant diseases, it was decided that the resolution should be brought under the notice of the Waite Institute, and that the Director be asked to express such comment on the resolution as he felt disposed to offer.

Assistance for Minnipa Farm Manager.—The Minnipa Conference also resolved—“That the Government be asked to provide an assistant to the manager of the Minnipa Experimental Farm, and so allow the manager to spend more time amongst the farmers on the Peninsula.” It was decided to ask the Director of Agriculture for a report on the matter.

Reduced Fares for Bureau Members Travelling to Government Farms.—The Roberts and Verran Branch resolved—“That members of the Agricultural Bureau be entitled to travel quarter fare when

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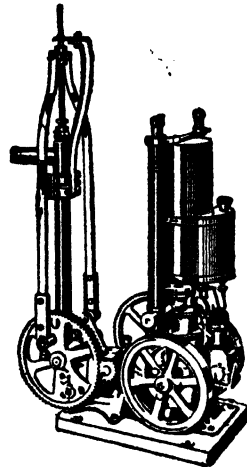
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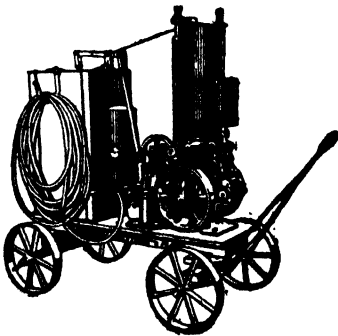
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visiting experimental farms if appointed to do so as representatives of a Branch." The Secretary was instructed to inform the Branch that the Board could not entertain the suggestion.

Compulsory Dipping on Eyre Peninsula.—Correspondence was received from the Miltalie Branch asking that Eyre's Peninsula should be made a compulsory sheep dipping area. It was decided to ask the Chief Inspector of Stock to report on the matter.

Enforcement of Foul Brood in Bees Act.—A letter was received from a member of the Mount Barker Branch of the Agricultural Bureau, in which it was pointed out that the beekeeping industry would be considerably assisted if the Foul Brood in Bees Act was enforced. The correspondent also drew attention to the fact that foul brood existed in the Mount Barker district, and had been responsible for heavy losses. The Secretary was instructed to inform the correspondent that at the present time there was no Inspector of Apiaries, but that an article dealing with foul brood in bees would be published in the *Journal of Agriculture*.

Experimental Farms.—Captain White moved, and Mr. F. Coleman seconded—"That the Board appoint a committee to review the experimental work carried out at the Government farms with a view to estimating their value to the State, and also with a view to making suggestions whereby they could be of greater use to the State." The resolution was carried, and a committee, consisting of Messrs W. S. Kelly, H. Wicks, J. W. Sandford, A. M. Dawkins and F. Coleman, was appointed.

Date of Next Meeting.—It was decided that the Board should go into recess during January, and that the next meeting should be held at the Government orchard at Blackwood, on Wednesday, February 11th, 1925.

New Members.—The following names were added to the rolls of existing Branches:—Blackheath—J. Fletcher; Wilkawatt Women's—Mrs. A. J. Keatch, Mrs. W. C. Webb, Mrs. A. G. Dick, Miss H. Phillips, Miss L. Phillips, Miss R. Phillips, Miss V. Gregurke, Miss P. Gregurke; Paskeville—W. T. Barton; Kongorong—R. Manson; Kalangadoo Women's—Mrs. W. J. Koop, Mrs. T. Hemmings; Rapid Bay—J. E. Virgo; Cobdogla—P. Nietschke; Tweedvale—E. V. Gerhardy, T. Reilly, E. W. Schubert, C. Meyer; Mannanarie—J. McKeough, M. McKeough, R. McPherson, K. McPherson; Lyndoch—J. K. Barritt, F. D. Denholm; Younghusband—A. Semmler; Kalangadoo—S. V. Angus, W. Williams; Darke's Peak—L. C. Collins, T. Hutchins; Block "E"—J. Mustin, H. B. Davies, W. E. Wells; Mallala—C. Secombe; Wirrabara—W. E. Elfinson; Hartley—P. Wagenknecht; Glossop—J. Taylor, B. Stidiford; Penneshaw—R. Johnson, A. Christie, A. Gobell, C. Neave, Andrew Howard; Petina—G. A. Simonds, J. H. Bascombe, W. S. Bailey, A. Holland, E. Myers; Tantanoola—G. L. Duffield.

DAIRY AND FARM PRODUCE MARKETS.

A. W. Sandford & Co., Limited, reported on January 2nd, 1925:—

BUTTER.—Since our last report an advance of 1d. per lb. was recorded with top grades, no alteration occurring in the values of the lower grades, of which there is a big surplus. Difficulty is being experienced in effecting sales with all lower grades, owing to overseas' buyers not operating keenly for parcels, and very large quantities have been shipped on consignment. Although the latest London advices state that the market is weaker it is expected that no alteration will take place as regards local values for the time being. At the close of the month values were as follows:—Choicest factory and creamery fresh butter, in bulk, 1s. 3½d.; first-grade bulk, 1s. 1½d.; second and third grade bulk, 11½d. to 1s.; best separators and dairies, 1s. 1d. to 1s. 3d.; fair quality, 11½d. to 1s. 0½d.; good-conditioned stores and collectors', 10d. to 11d.; heated lots, 9d. to 9½d. per lb.

EGGS.—Very substantial quantities have been marketed and readily cleared by local and Victorian purchasers, fresh hen realising 11½d.; duck, 1s. 0½d. per dozen.

CHEESE.—Although large consignments were forwarded from the South-Eastern factories, the exceptionally brisk local trade, coupled with good interstate demand—especially from Western Australian buyers—has kept stocks cleared, values for new makes being 7d. to 8d. per lb. for large to loaf; semi-matured and matured, 10d. to 11d. per lb. for large and medium sizes.

HONEY.—Values in this line have eased slightly, but at the reduced rates a good trade has been done in the eastern States with consignments of the new season's prime liquid honey. As regards lower grades, the market is still heavily supplied with last season's, and buyers are not operating to any extent, although several parcels have been sold at 2d. per lb. Values are as follows:—Prime clear extracted in liquid condition, 3½d. to 4d.; best-quality candied lots, 3½d.; lower grades, down to 2d.; beeswax saleable at 1s. 3½d. to 1s. 4d.

ALMONDS.—Ample supplies have been available as regards Brandis, which received good attention from local and interstate purchasers. With kernels supplies were inadequate, and values have advanced, Brandis realising 9d. to 9½d.; mixed softshells, 8d. to 8½d.; hardshells, 4d.; kernels, 2s. to 2s. 1d. per lb.

BACON.—During the month storekeepers paid particular attention to purchases of hams, also sides of bacon, supplies being rather short towards the end of the month, owing to the heavy purchasing. Local middles and rolls are still available in large quantities at slightly easier rates. Best local hams, 1s. 7½d. to 1s. 8d.; best factory-cured sides, 1s. 3½d. to 1s. 4d.; best factory-cured middles, 1s. 4d. to 1s. 4½d.; Hutton's "Pineapple" sides, 1s. 3d.; Hutton's "Pineapple" rolls, 1s. 3d.; Hutton's "Pineapple" middles, 1s. 7d.; Hutton's "Pineapple" hams, 1s. 8d. to 1s. 9d. per lb. Lard.—Hutton's "Pineapple" brand lard, in packets, 9d.; in bulk, 8d. per lb.

LIVE POULTRY.—The holding of our auction sales daily during the last fortnight of the month was very satisfactory, as exceptionally heavy quantities came forward, and each market was readily cleared. Farmers wisely sent their surplus stock to us, and although considerable numbers were offering, the demand for good-conditioned lots exceeded the marketings. Turkeys this year were scarce, and high prices were obtained. With geese the quality in many instances was not up to the usual standard; however, the prices were very satisfactory considering the quality. Crates obtainable on application. The following rates were obtained:—Prime roosters, 5s. to 8s. 6d. each; nice-conditioned cockerels, 3s. to 4s. 9d.; poor-conditioned cockerels, 2s. 3d. to 2s. 9d.; plump hens, 3s. 6d. to 5s.; medium hens, 2s. 9d. to 3s. 3d.; light hens, 2s. 3d. to 2s. 6d.; geese, good conditioned, 8s. 6d. to 10s. 6d.; geese, fair conditioned, 7s. 6d. to 8s.; ducks, good conditioned, 5s. 6d. to 8s. 9d.; ducks, fair conditioned, 3s. to 5s.; ducklings, lower; turkeys, good to prime conditioned, 1s. 9d. to 2s. 2½d. per lb. live weight; turkeys, fair conditioned, 1s. 3d. to 1s. 8d. per lb. live weight; turkeys, fattening sorts, lower; pigeons, 8d. each.

ONIONS.—Best new white onions, at 10s. to 10s. 6d. per cwt. on rail.

POTATOES.—Prime new potatoes, at 9s. 6d. to 10s. 6d. per cwt. on rail.

**IMPORTS AND EXPORTS OF FRUITS, PLANTS, ETC.,
NOVEMBER, 1924.**

IMPORTS.

Interstate.

Apples (bushels)	26
Bananas (bushels)	13,663
Oranges (bushels)	1
Passion fruit (bushels)	44
Pineapples (bushels)	115
Tomatoes (bushels)	3
Cucumbers (packages)	709
Peanuts (packages)	2
Onions (bags)	121
Potatoes (bags)	6,832
Bulbs (packages)	4
Plants (packages)	11
Trees (packages)	1
Wine casks (empty)	3,327

Fumigated—1 package trees and 108 wine casks.

Rejected—15 bushels bananas, 1 bushel oranges, 3 bushels tomatoes, and 19 secondhand cases.

Overseas.

Federal Quarantine Act.

4,746 packages seeds, etc.

EXPORTS.

Federal Commerce Act.

2,005 packages citrus fruits, 11,207 packages dried fruit, and 10 packages jam were exported to overseas markets. These were consigned as follows:—

London.

Dried fruits	6,386
Citrus fruit	3

New Zealand.

Dried fruit	2,835
Citrus fruit	2,002

South Africa.

Dried fruit	515
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India and East.

Dried fruit	71
Jam	10

Canada.

Dried fruit	1,400
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RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of, and to the end of December, 1924, also the average precipitation to the end of December, and the average annual rainfall.

Station	For Dec., 1924.	To end Dec., 1924.	Average Annual Rainfall	Station	For Dec., 1924.	To end Dec., 1924.	Average Annual Rainfall
FAR NORTH AND UPPER NORTH.				LOWER NORTH—continued.			
Oodnadatta	—	5.01	4.96	Spalding	1.04	22.66	20.24
Marree	0.39	5.43	6.03	Gulnare	1.05	23.38	19.48
Farina	0.75	7.04	6.66	Yacka	1.03	19.60	15.56
Copley	0.50	6.76	8.35	Koolunga	0.83	17.05	15.95
Beltana	1.00	5.63	8.95	Snowtown	0.69	16.49	16.09
Blinman	1.12	7.35	12.51	Brinkworth	0.96	17.36	16.39
Tarcoola	1.89	8.76	7.64	Blyth	0.85	19.45	17.07
Hookina	1.16	7.72	13.29	Clare	1.39	28.25	24.80
Hawker	0.88	9.05	12.94	Mintaro	1.12	25.39	23.86
Wilson	1.00	9.87	12.63	Watervale	1.44	29.56	27.64
Gordon	1.43	9.04	11.52	Auburn	1.07	25.53	24.41
Quorn	1.01	10.98	14.26	Hoyleton	0.65	18.64	17.91
Port Augusta	1.24	10.66	9.68	Balaklava	0.53	15.52	15.98
Port Augusta West	1.10	9.86	9.70	Port Wakefield	0.62	13.85	13.28
Bruce	1.27	9.15	10.79	Terowie	1.11	13.28	13.82
Hammond	1.32	10.51	12.02	Yarcowie	1.11	11.99	14.19
Wilmington	2.44	15.58	18.41	Hallett	1.21	19.54	16.53
Willowie	1.26	11.70	12.79	Mount Bryan	0.93	19.71	17.13
Melrose	1.65	21.72	23.53	Koorunga	1.17	19.44	18.14
Booleroo Centre	1.10	16.22	15.82	Farrell's Flat	1.27	18.97	19.09
Port Germein	1.21	14.22	12.90				
Wirrabara	1.30	20.65	19.85	WEST OF MURRAY RANGE.			
Appila	1.06	18.40	15.05	Manoora	1.28	20.91	19.12
Cradock	1.04	7.28	11.53	Saddleworth	0.85	20.29	19.89
Carrieton	1.30	10.56	12.95	Marrabel	0.81	21.26	20.00
Johnburg	1.36	9.61	10.99	Riverton	0.61	23.58	20.97
Eurelia	1.16	9.75	13.62	Tarlee	0.44	21.03	18.18
Orroroo	1.14	10.38	13.73	Stockport	0.47	19.44	16.89
Naackara	1.56	9.12	11.85	Hamley Bridge	0.48	19.24	16.82
Black Rock	1.18	11.49	12.83	Kapunda	0.57	23.09	20.04
Ucoola	1.53	8.62	11.91	Freeling	0.44	18.75	18.19
Peterborough	1.05	16.58	13.60	Greenock	0.53	24.72	21.93
Yongala	1.38	19.19	14.73	Truro	0.45	24.18	20.43
				Stockwell	0.40	23.86	20.58
				Nuriootpa	0.35	19.38	21.17
				Angaston	0.27	24.87	22.71
				Tanunda	0.30	22.94	22.40
				Lyndoch	0.35	27.50	23.41
				Williamstown	0.41	29.01	27.75
LOWER NORTH-EAST.							
Yunta	1.10	7.54	8.79	ADELAIDE PLAINS.			
Waukaringa	0.78	7.79	8.47	Mallala	0.34	20.53	16.92
Mannahill	0.73	8.28	8.62	Roseworthy	0.44	20.57	17.59
Cockburn	0.76	6.99	8.29	Gawler	0.26	22.11	19.24
Broken Hill, N.S.W.	0.67	6.43	9.99	Two Wells	0.18	20.49	16.03
				Virginia	0.11	18.60	17.51
				Smithfield	0.40	20.32	17.62
				Salisbury	0.34	21.16	18.75
				North Adelaide	0.31	27.86	22.66
				Adelaide	0.31	23.44	21.18
				Glenelg	0.10	19.92	18.63
				Brighton	0.22	22.04	21.60
				Mitcham	0.33	27.06	24.54
				Glen Osmond	0.24	27.60	26.34
				Magill	0.16	31.44	25.81
LOWER NORTH.							
Port Pirie	1.22	15.64	13.58				
Port Broughton	0.65	15.17	14.33				
Bute	0.55	15.25	15.90				
Laura	1.15	24.87	18.34				
Oatowie	1.19	19.86	17.27				
Jamestown	1.21	22.86	18.04				
Gladstone	1.14	23.57	16.42				
Crystal Brook	0.94	23.26	16.00				
Georgetown	1.03	24.74	18.64				
Narridy	1.02	18.09	16.36				
Redhill	0.38	15.85	17.38				

RAINFALL—continued.

Station.	For Dec., 1924.	To end Dec., 1924.	A'v'e Annual Rainfall
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MOUNT LOFTY RANGES.

Teatree Gully	0.39	30.80	28.32
Stirling West	0.43	47.78	47.30
Uraidla	0.55	44.10	44.79
Clarendon	0.14	30.40	33.29
Morphett Vale	0.16	23.30	23.07
Noarlunga	0.21	23.84	20.56
Willunga	0.28	27.30	26.09
Aldinga	0.12	20.60	20.56
Myponga	0.35	29.20	30.35
Normanville	—	24.35	20.88
Yankalilla	0.10	22.90	23.59
Mount Pleasant	0.26	25.73	27.62
Birdwood	0.03	26.59	29.78
Gumeracha	0.32	34.49	33.69
Millbrook Reservoir	0.29	36.91	38.63
Tweedvale	0.18	38.10	36.12
Woodside	0.29	33.98	32.48
Ambleside	0.14	34.28	25.23
Nairne	0.18	26.66	28.63
Mount Barker	0.38	32.23	31.54
Echunga	0.34	34.05	33.41
Macclesfield	0.39	28.90	30.90
Meadows	0.30	37.25	36.61
Strathalbyn	0.25	21.48	19.45

MURRAY FLATS AND VALLEY.

Meningie	0.07	20.60	18.83
Milang	0.14	14.51	15.47
Langhorne's Creek	—	16.84	14.88
Wellington	0.12	16.69	14.85
Tailm Bend	0.23	17.92	14.92
Murray Bridge	0.35	16.00	13.98
Callington	0.19	16.51	15.56
Mannum	0.03	12.41	11.66
Palmer	—	13.20	15.58
Sedan	0.22	13.68	12.37
Swan Reach	0.56	12.79	11.05
Blanchetown	0.55	7.94	10.01
Eudunda	1.10	16.09	17.53
Sutherlands	0.88	10.27	11.27
Morgan	0.84	10.37	9.26
Waikerie	0.96	12.50	9.79
Overland Corner	0.77	8.38	10.15
Loxton	1.09	13.35	12.36
Renmark	0.74	9.59	10.98
Monash	—	11.44	—

WEST OF SPENCER'S GULF.

Eucla	0.46	6.73	9.98
White Well	0.27	6.29	8.99
Fowler's Bay	0.45	8.35	12.14
Penong	0.45	12.94	12.61
Ceduna	0.52	9.19	10.25
Smoky Bay	0.33	9.49	11.16
Petina	0.30	12.65	13.12
Streaky Bay	0.24	12.62	15.11
Talia	0.30	14.08	15.36
Port Elliot	0.40	15.27	16.66
Port Lincoln	0.16	14.68	19.71
Cummins	—	15.82	18.85

WEST OF SPENCER'S GULF—continued.

Tumby	0.39	15.19	14.62
Carrow	0.42	11.38	14.31
Arno Bay	0.32	10.96	13.01
Cowell	0.89	11.07	11.57
Minnipa	—	11.38	15.32
Ungarra	0.29	15.84	17.35
Dark's Peak	0.26	13.88	16.43
Kimba	0.33	11.43	15.85

YORKE PENINSULA.

Wallaroo	0.40	14.46	14.19
Kadina	0.31	15.57	16.08
Moonta	0.24	15.61	15.39
Green's Plains	0.30	14.99	15.97
Maitland	0.06	20.44	20.31
Ardrossan	0.13	13.58	14.25
Port Victoria	—	16.98	15.62
Curramulka	0.06	17.86	18.31
Minlaton	0.12	19.15	18.06
Brentwood	—	17.52	16.02
Stansbury	—	17.94	17.15
Warooka	0.04	16.56	17.97
Yorketown	0.04	15.79	17.35
Edithburgh	—	15.67	16.70

SOUTH AND SOUTH-EAST.

Cape Borda	0.16	21.77	25.13
Kingscote	0.15	17.15	19.15
Penneshaw	0.22	16.00	19.53
Victor Harbor	0.17	18.87	21.51
Port Elliot	0.19	19.48	20.17
Goolwa	0.46	16.17	17.87
Meribah	1.30	13.84	—
Alawoona	0.72	12.88	—
Mindarie	0.33	13.87	12.39
Sandalwood	0.34	15.27	14.98
Karoonda	0.19	16.49	15.32
Pinnaroo	0.02	16.79	15.60
Parilla	0.09	14.24	14.77
Lameroo	0.10	22.33	16.51
Parrakie	0.11	14.85	14.83
Geranium	0.23	18.33	16.83
Peake	0.07	19.26	16.86
Cooke's Plains	0.64	20.31	15.31
Coomandook	0.35	21.82	17.50
Coonalpyn	0.33	21.75	17.51
Tintinara	0.38	19.90	18.89
Keith	0.19	18.09	18.38
Bordertown	0.03	19.65	19.46
Wolseley	—	20.64	18.31
Frances	0.03	22.96	19.93
Naracoorte	0.33	23.30	22.63
Penola	0.56	24.54	23.10
Lucindale	0.33	24.17	24.53
Kingston	0.45	25.27	24.71
Robe	0.60	21.11	27.14
Beachport	0.31	21.01	29.51
Milliecent	0.93	31.42	33.25
Kalangadoo	0.97	30.32	31.25
Mount Gambier	0.54	24.93	26.63

AGRICULTURAL BUREAU REPORTS.

INDEX TO CURRENT ISSUE AND DATES OF MEETINGS.

Branch.	Report on Page	Dates of Meetings		Branch.	Report on Page	Dates of Meetings.	
		Jan.	Feb.			Jan.	Feb.
Alawoona	•	—	—	Gawler River	•	—	—
Aldinga	•	—	—	Georgetown	•	10	7
Allandale East	•	9	6	Geranium	•	31	28
Alma	•	R	—	Gladstone	574	9	6
Amyton	•	12	9	Glencoe	•	8	12
Angaston	•	—	—	Glossop	588	7	4
Appila-Yarrowie	•	—	—	Goode	•	—	9
Arthurton	•	—	—	Green Patch	586	5	9
Ashbourne	•	—	—	Gulnare	576,579	R	R
Balaklava	•	10	14	Gumeracha	•	12	9
Balhannah	•	—	—	Halidon	•	—	—
Barmers	588	5	9	Hartley	588	—	—
Beetaloo Valley	•	—	—	Hawker	•	—	—
Belalie North	•	10	7	Hilltown	•	—	—
Berri	•	7	11	Hookina	•	8	5
Bethel	†	—	—	Inman Valley	•	—	—
Big Swamp	•	—	—	Ironbank	594	9	6
Blackheath	594	9	6	Kadina	•	R	—
Black Springs	583	—	—	Kalangadoo (Women's)	600	10	14
Blackwood	•	19	16	Kalangadoo	600	10	14
Block E	•	—	—	Kangarilla	†	—	—
Blyth	•	—	7	Kanmantoo	•	—	—
Boooleroo Centre	573	9	6	Karoonda	•	7	11
Borrika	•	—	—	Keith	•	—	—
Brentwood	588	8	6	Ki Ki	•	—	—
Brinkley	574	R	R	Kilkerran	•	8	5
Brinkworth	•	R	9	Kimba	•	—	—
Bundaleer Springs ..	•	—	—	Kingston-on-Murray ..	•	—	—
Bute	•	—	5	Kongorong	•	5	9
Butler	•	—	—	Koonibba	600	—	5
Calca	•	—	—	Koppio	•	—	9
Cadell	•	—	—	Kringin	•	R	R
Canowie Belt	•	—	—	Kybybolite	•	R	3
Carrow	•	—	4	Lake Wangary	•	10	7
Charra	584	—	4	Lameroo	•	10	7
Cherry Gardens	594	—	—	Laura	579	10	7
Clanfield	•	—	—	Lenswood and Forest	•	—	—
Clare	583	—	—	Range	•	8	5
Clarendon	•	—	—	Light's Pass	•	—	—
Claypan Bore	•	R	R	Lipson	•	—	—
Cleve	•	—	—	Lone Gum and Monash ..	•	7	4
Cobdogla	587	—	—	Lone Pine	583	—	—
Collie	•	—	—	Longwood	588	—	—
Colton	•	R	—	Loxton	•	—	—
Ooomandook	•	7	4	Lucindale	595	—	—
Cornalbyn	•	9	6	Lyndoch	583	—	—
Cradook	•	—	—	McLachlan	584	—	—
Crystal Brook	579	10	7	McLaren Flat	590,594	—	—
Cungena	•	—	—	MacGillivray	•	6	3
Currency Creek	•	9	6	Maitland	•	8	5
Cygnet River	•	8	6	Mallala	580	R	16
Darke's Peak	586	—	—	Maltee	•	9	6
Denial Bay	•	—	—	Mangalo	•	—	—
Edillilie	•	10	7	Mannanarie	579	R	5
Elbow Hill	•	13	—	Marama	•	—	—
Eurelia	•	R	R	Meadows	•	—	11
Farrell's Flat	•	—	—	Milang	•	10	14
Frances	•	31	28	Millicent	•	—	6

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Mindarie	*	—	—	Rockwood	595	5	9
Minlaton	*	—	—	Rosedale	*	—	—
Minnipa	*	—	—	Rosy Pine	*	—	—
Monarto South	588	—	—	Rudall	*	R	5
Moonla	584	R	6	Saddleworth	*	—	—
Moorak	*	9	6	S a d d l e w o r t h	583	9	13
Moorook	600	9	—	(Women's)			
Morchard	*	R	7	Salisbury	*	—	3
Morphett Vale	*	8	12	Salt Creek	*	—	—
Mount Barker	*	7	4	Sandalwood	*	—	—
Mount Bryan	576	R	—	Shoal Bay	594-5	—	—
Mount Byran East ..	*	—	—	Smoky Bay	*	—	—
Mount Gambier	595	10	14	Spalding	580	16	21
Mount Hope	*	10	7	Stirling	594	10	7
Mount Pleasant	592, 594	—	—	Stockport	583	—	—
Mount Remarkable ..	*	—	—	Streaky Bay	586	10	14
Mount Schank	*	13	10	Strathalbyn	*	6	3
Mundalla	*	7	—	Talia	*	10	14
Murray Bridge	*	—	—	Tantanoola	596-8	3	7
Murraytown	*	—	—	Taplan	*	—	3
Mypolonga	*	R	R	Tarcowie	578	R	3
Myrla	*	—	7	Tarlee	*	R	R
Nantawarra	*	8	5	Tatiana	600	R	—
Naracoorte	*	10	14	Tweedvale	595	8	12
Narridy	*	10	7	Two Wells	*	—	—
Narrung	*	10	7	Urnidla & Summertown	*	5	2
Nesta	*	—	—	Veitch	*	—	—
Nelshaby	*	10	7	Virginia	*	R	5
Netherton	*	7	4	Waikerie	*	10	14
New Residence	*	7	4	Wall	*	—	—
North Booborowie ..	*	R	R	Wanbi	*	—	—
North Bundaleer	*	—	—	Warcowie	573	R	R
Nunkeri and Yurgo ..	*	—	4	Watervale	*	—	—
O'Loughlin	*	—	4	Weavers	*	—	9
Oreroco	573	—	—	Wepowie	*	R	3
Owen	*	9	6	Whyte-Yarowie	*	12	9
Parilla	*	R	6	W i l l i a m s t o w n	†	R	7
Parilla Well	*	12	9	(Women's)			
Paruna	*	—	—	Williamstown	582, 584	9	6
Peakeville	584	9	6	Willowie	*	7	4
Pata	*	—	—	Wilkawatt (Women's)	†	—	—
Penola	*	—	7	Wilmington	*	—	4
Penneshaw	592	12	9	Windsor	*	6	3
Petina	*	24	28	Winkie	*	—	—
Pinnaroo	*	9	6	Wirrabara	579	—	—
Pinnaroo (Women's) .	*	—	6	Wirrega	*	—	—
Pompoota	*	14	—	Wirrilla	*	10	7
Poochera	586	R	R	Wirrulla	*	—	—
Port Broughton	*	9	6	Wookata	*	—	—
Port Elliot	594	16	21	Wudinna	*	—	—
Port Germein	*	—	14	Wynarka	588	—	—
Pygery	*	10	7	Yacka	*	—	3
Ramco	*	—	9	Yadnarie	*	—	3
Rapid Bay	595	—	7	Yallunda Flat	*	—	—
Redhill	578	—	—	Yaninee	*	—	—
Rendelsham	*	5	9	Yeelanna	*	R	R
Renmark	588	8	5	Yongala Vale	*	—	—
Riverton	*	—	—	Yorketown	*	—	—
Riverton (Women's) .	*	—	—	Youngusband	*	R	12

* No report received during the month of December.
A.M. Annual Meeting.

† Formal.
R. In recess.

‡ Held over until next month.

THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

Every producer should be a member of the Agricultural Bureau. A postcard to the Department of Agriculture will bring information as to the name and address of the secretary of the nearest Branch.

If the nearest Branch is too far from the reader's home, the opportunity occurs to form a new one. Write to the department for fuller particulars concerning the work of this institution.

REPORTS OF BUREAU MEETINGS.

UPPER-NORTH DISTRICT.

(PETERBOROUGH AND NORTHWARD.)

ORROROO (Average annual rainfall, 13.42in.).

November 11th.—Present: eight members and two visitors.

IS THE RABBIT A PEST?—The Hon. Secretary (Mr. H. G. Matthews), in the course of a short paper dealing with the rabbit mentioned that whilst the animal was recognised as a pest over the whole of Australia, he thought that people lost sight of the fact that large sums of money were derived from the sale of the carcasses and furs of rabbits. In London rabbits realised 1s. 9d. per head, and a large trade was carried on in different parts of the Commonwealth in canning rabbits for overseas trade. Poultry keepers and pig raisers also utilised the carcasses for feeding. Then there was a good European and English demand for skins for fur making, in addition to which large quantities of skins were used by Australian furriers, and prices up to 5s. 3d. per lb. had been paid for the skins.

WARCOWIE, November 4th.—An instructive paper, "General Farming Practices," was read by Mr. T. Ryan, and an interesting discussion followed.

MIDDLE-NORTH DISTRICT.

(PETERBOROUGH TO FARRELL'S FLAT.)

BOOLEROO CENTRE (Average annual rainfall, 15.83in.).

November 7th.—Present: 10 members and two visitors.

HAY MAKING.—Mr. C. Llewelyn, who read a paper dealing with this subject, said hay making was the first work in connection with harvesting operations that engaged the attention of the farmers. Prior to cutting the crop, the binder should be overhauled and placed in thorough working order. There were many different opinions as to when a crop was fit to cut, but it was generally agreed that it was a mistake to cut the crop too green. The hay should be left at least 48 hours after cutting before stooking, but if stormy weather prevailed, the sooner it was stooked the better. Care should be taken not to cart the hay whilst it was too green, because there was a danger of it heating, and if it did not cause a fire it would spoil a quantity of the hay. Stack building was another very important work. A stack carelessly built would in all probability leak, and so spoil a portion of the hay. If possible, the hay should be pitched off from both sides in order that the stack would settle evenly. Before reaping was commenced, the harvester should be examined. It was advisable to have a choke cutter on every harvester; it would soon pay for itself, not only in the time saved, but in wheat saved, because every time a choke was pulled out a certain amount of wheat was knocked down. Reaping in damp weather was a mistake, because of the amount of wheat that was wasted. The bags should be sown up as soon as possible so that in the event of a thunderstorm they would be ready to stack. Where it was possible, the speaker suggested that the team should be on the road all or part of the time in carting, because wheat lost a certain

amount of weight whilst standing in the paddock. In the discussion that followed, Mr. L. Michael preferred to stook hay immediately after cutting, because it dried better and went together better in the stook. Mr. D. Michael said the advantage in cutting the hay a little on the green side was that it gave one more time to handle the hay before the wheat was ripe for reaping. Grain in the way of oats could be fed with the chaff to horses to make up for the loss of grain in hay. He also said that in stack building it was very important to keep the middle of the stack high.

BRINKWORTH.

November 10th.—Present: 23 members and five visitors.

MARKETING WHEAT.—In the course of a paper dealing with this subject the Hon. Secretary (Mr. E. L. Carlyon) said the standard of Australian wheat in the world's market had fallen considerably in recent years. The cause of that, he considered, was the way in which some of the wheat was marketed. Apart from the f.a.q. wheat, growers marketed samples containing foreign matter, and badly cleaned and badly threshed wheat. In isolated cases, wheat grown in that district contained a considerable amount over the percentage of barley allowable without a dock. Especially was that noticeable in the early varieties; the later crops were not so bad, because the machines did not harvest all the barley. That was due to the fact that the farmer had seed which he considered sufficiently free from barley, but when the crop was harvested more barley appeared in the sample than was allowable. The weed was also carried over the farm by the horses being fed on barley. He was certain that seed could be procured locally that contained very little barley. *Badly Cleaned Wheat.*—Some samples contained far too much cocky chaff, whilst some had broken grain. The cocky chaff sample was more in evidence at the commencement of the season, when machines were not in good running order, and in some cases the harvesters were put into the crop before the wheat was ready for stripping, with the result that it did not clean as it should. His experience had been that the broken grain sample was usually from a crop that had been harvested with the reaper thresher. That was a serious defect, because the millers ground the broken grain separately, and it yielded produce of an inferior quality. The breaking of grain could in most cases be avoided, because it was noticed that whilst one farmer made a perfect sample, the wheat from another farmer was almost screenings, yet both samples had been taken off with reaper threshers of the same make. Should bulk handling be introduced into Australia, poor samples would be more in evidence than at present. In Canada and other parts of the world graders were installed at the receiving stations, the wheat was graded, and the f.a.q. sample purchased, whilst inferior and broken grain was returned to the farmer. He wished to emphasise the need for discontinuing the growth of red wheats, because a dock of 2d. per bushel would be imposed this season on all known red wheats. The common red wheats grown in that district which came under the above heading were:—Red Russian, King's Early, King's Red, and Teagle's Red. A shipload of Australian wheat with a few bags of red wheat mixed through the cargo had been known to be subjected to a dock of 3d. per bushel at the port of discharge. Farmers should also endeavor to maintain the high standard of Australian wheat, because they could then demand the best price for the grain in the markets of the world.

GLADSTONE (Average annual rainfall, 16in.).

November 14th.—Present: nine members.

The monthly meeting of the Branch was held at the residence of Mr. J. H. Sargent. Members and visitors inspected the crops, particular attention being devoted to a fine crop of Sargent's Wonder. In another paddock a pasture that had been top dressed with super was inspected. The natural herbage had made wonderful growth, Mr. Sargent expressing the opinion that the land that had been top dressed was capable of carrying an extra sheep to the acre. Some pens of Berkshire and Yorkshire pigs were also very favorably commented upon. Reports of delegates to the Annual Congress, and the tour through the Adelaide Hills to inspect top dressing experiments were received and discussed. Afternoon tea was provided by Mrs. Sargent.

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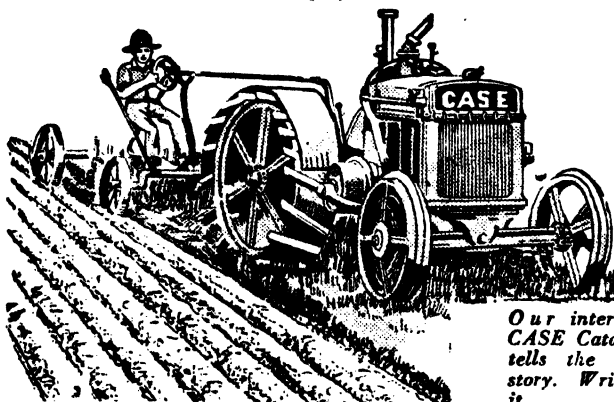
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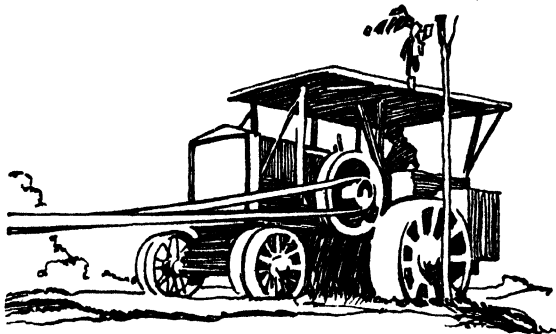
September 19th.—Present: 13 members and two visitors.

DISEASES OF WHEAT.—The Hon. Secretary (Mr. R. S. Booth) read a paper in which he detailed the life history of various diseases of cereals, and in the discussion that followed, in reply to a question by Mr. J. H. Teakle as to the best treatment for smut, Mr. Booth suggested turning the wheat out on a floor and sprinkling it with a 1½ per cent. solution of bluestone, turning it backwards and forwards with a shovel, and then sprinkling the grain with slaked lime. Mr. B. W. Thomas asked what conditions favored the development of rust, to which Mr. Booth replied a humid atmosphere, warmth, and moisture. Mr. B. W. Thomas also inquired why there was more rust after wet summers. The writer of the paper stated that such a condition was probably due to the fact that wet summers would be ideal for the propagation of rust in its second and third stages, and would thus give rise to larger numbers of spores to attack the crop in the following spring if conditions were then favorable. Mr. F. Allchurch asked why self-sown crops were usually clean and free from disease. Mr. Booth said that was probably due to the fact that smut spores had been germinated by moisture in the ground or from early showers, which had not been sufficiently heavy to germinate the wheat. Hence the smut had malted. Mr. W. Thomas asked, "Which soils are likely to be worse for smut, hungry or rich soils?" Mr. Booth said the latter soils, because of the organic matter they contained which would greatly aid the formation of the sporidia form of disease in the soil. Mr. D. M. Hodge pointed out that on one occasion a friend used his pickling tub (after he had pickled smutty wheat) and that the wheat he pickled in it was the only smutty portion of his crop, although he had strengthened the pickle. Numerous other questions were asked and answered by the speaker. Mr. Sandow showed a fine specimen of Currawa wheat. The Hon. Secretary (Mr. Booth), with the aid of a microscope, showed the members spores of bunt.

MOUNT BRYAN (Average annual rainfall, 15.83in.).

November 8th.—Present: eight members.

HAY MAKING.—Mr. F. Jefferies read the following paper:—"Hay making is one of the most important jobs on the farm, because so much depends on the manner and stage at which hay is cut. The binder should be overhauled a week or so before a commencement is made to see if there are any new parts needed; if so, they can be procured at once and fitted on the machine, and worked around with the handle on the machine to see that they fit correctly. The time for cutting hay varies according to the variety and class of cereal to be cut. If a farmer has in his crop any patches thick with wild oats, the crop should be cut before the oats are ripe. This will assist in cleaning the paddock, because practically all the oats will be in the head, and after it has been stooked for a few days and the hay begins to dry many of the oats will fall to the ground, but they will be in a heap around the stook, and if sheep are turned into the paddock after it has been cleared of the hay they will follow up the rows where the stooks stood, and clean up the oats. If the crop is clean it can be left until the corn is beginning to "firm," so that there will be a maximum percentage of corn in the chaff. Stooking is very important, because unless hay is stooked well it is very liable to damage, discolor, and deteriorate in value. The sheaves should be placed on the butt ends in three rows, one row down the centre and one row on either side leaning against the centre one. The wind will then be able to pass through the sheaves easily, and they will dry quickly, and in case of rain the water will run off the hay and the sheaves will dry quickly. When the hay is thoroughly dry it can be carted and stacked. The time of drying will vary according to the weather, size of sheaves, and type of crop, but on no account should the hay be carted in before it is dry, or it will develop mould in the stack. In building the stack, the walls should be kept as straight as possible, and the centre of the stack full. It is necessary to build a steep roof on the stack. The eaves should project from 4in. to 6in. over the walls to drain the water clear of the side of the stack. I favor a high stack rather than a long, low, flat one, because the former will tend to keep mice out owing to the weight making it set tightly, and there will be less roof space to be damaged with rain. Covering the stack is most important, and should be done carefully. Where straw is plentiful it can be placed loosely on the stack, and is



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just as effective as thatching, provided plenty of straw is used and it is kept well combed out whilst it is being put on. It is also necessary to tie down the straw with old wires, the wires being not more than about 3ft. apart. These can be fastened by driving in wooden pegs into the side of the stack as high up as one can reach, and the end of the wire on the other side should have a weight of some description attached to it; a bundle of old plough shares fastened together by a piece of wire, an old casting off some machine, or an old bucket filled with stones are handy weights."

REDHILL (Average annual rainfall, 16.79in.).

November 8th.

ANNUAL TOUR OF INSPECTION.—Eighteen members of the Bureau and farmers from the Redhill, Yacka, Snowtown, and Merriton districts took part in the annual tour of the district arranged by the local Branch of the Agricultural Bureau. In the course of the tour the crops belonging to the following farmers were inspected:—Messrs. Butler, Dick, Coffey, Clothier, Green, Wheaton, Hayes, Pilkington, Crouch, Bentley. At Mr. M. Coffey's farm particular interest was shown in a series of experimental plots where the following varieties of wheat were being tested:—"Joffre," "Sergeant," "Caliph," "Nabawa," "Ford," "Zealand Blue," "Indiscreet," "Indian C. and J.B.," "Sultan," "Dan," "Fondling," "Onus," and "Minister." Afternoon tea was provided by Mrs. Coffey. The evening was devoted to a smoke social, when several speeches were delivered and a number of vocal and instrumental items were rendered.

TARCOWIE (Average annual rainfall, about 15½in.).

November 11th.—Present: 14 members.

HAY GROWING AND CUTTING.—Mr. G. H. Watkins in the course of a paper dealing with this subject said most farmers in that district were principally engaged in wheat growing, and their usual methods of cutting hay were to work the binder around headlands, and dirty patches in the crops, and by so doing such wheats as Federation, Major, and other similar varieties were often cut for hay. If farmers adopted the plan of sowing, say, 30 or 40 acres of the best land with good hay wheats, and gave such plots the benefit of extra working during the spring and summer months as well as a good dressing of super and seed at seeding time, they could look forward to producing heavier cuts of hay in most seasons than they were in the habit of cutting under present methods. When the binder was being prepared, the knotter, and especially all other parts through which the twine worked, should be placed in proper working order. In starting to cut around a paddock or piece of crop, it was advisable to make the first cut next the fence, in order to lessen the work in clearing out for a back cut. The binder should be so adjusted that large sheaves would be made. That would facilitate stacking, and would allow more hay to be handled at the same time. Again, there was a saving of twine in tying large sheaves. There was, however, one point in favor of a small sheaf, namely, when a back cut had to be made in a heavy crop, he had found that by setting the binder for a smaller sheaf, one had less trouble in making the back cut. As to the right stage at which to cut hay, if one intended cutting a stack to put by for some time, he favored cutting before the grain had developed in the ear, because that would act as a check to mice if there was not a mouse-proof yard on the holding. Usually farmers waited until the grain had formed before cutting, but he thought more nutriment was gained when the crop was cut in the grain. Some farmers allowed the hay to lie for about two days after cutting before it was stooked, but whilst that might be an advantage in cool weather, the best plan, as a rule, was to have it stooked close to the binder. Again, the hay was much better to handle if it was not allowed to become too dry. If there was any doubt as to the weather being good for curing hay, it would be advisable to make long stooks by placing two sheaves with the butts about 18in. apart, and bringing them together at the top and placing one more sheaf on either side. Stooks made on that plan allowed the air to circulate freely, but if the hay was to be left out for any length of time, then round stooks containing 20 or 25 sheaves would preserve the hay much better. In the discussion that followed, Mr. J. Ninnes favored a tough variety of wheat for the hay crop. Mr. McCarthy advocated rolling the land where one intended cutting to ensure a closer cut. Mr. W. S.

Ninnis considered that sowing a hay wheat variety around fences was a paying proposition, care being taken in cleaning out the drills where the main crop was being drilled. Mr. W. H. Thomas said oats were equal to wheat as hay, but the stacks should be kept mouse-proof. Mr. J. P. Smith said more trouble should be spent in roofing stacks. He advocated thatching where stacks were set aside as a standby, and favored a mixed stack of oaten and wheaten hay. Mr. O. Davidson considered oaten hay cheaper than wheaten hay at present prices for grain. Yet the oaten hay was equally as good for hay purposes.

CRYSTAL BROOK, November 7th.—Fifteen members attended the November meeting when a paper, "Cheques," was contributed by Mr. J. P. Ralph.

GULNARE, November 5th.—Thirty-two members and 23 visitors attended the November meeting, when Professor Arthur J. Perkins delivered an address, "Fallowing and Rotation of Crops."

LAURA, November 8th.—Mr. Hughes read an extract from the *Journal of Agriculture*, "Fruit Drying," and an interesting discussion followed.

MANNANARIE, November 13th.—The Hon. Secretary (Mr. H. Robinson) read a paper, "Power Farming," which aroused a keen and interesting discussion.

WIRABARA, November 29th.—Messrs. E. Stevens and J. Hollitt gave a report of a trip through the Adelaide Hills and Southern Districts, when top-dressing experiments carried out under the supervision of the Superphosphates Association were inspected.

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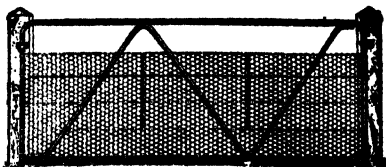


Fig. 132. Cyclone "N" Paddock Gate with round corners swung on face of posts. Can be had either rabbit-netted or with plain wires which make the gate sheep-proof.

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LOWER-NORTH DISTRICT.**ADELAIDE TO FARRELL'S FLAT.)**

MALLALA (Average annual rainfall, 16.88in.).

November 24th.—Present: six members.

PIG RAISING.—Mr. W. March, in the course of a short address on this subject, said suitable styes or runs for the pigs were most essential. In some instances the pigs were shut up in places not suitable for any dumb animal. The sty should be dry, and provision made for a supply of clean straw for bedding. He then read extracts from a departmental bulletin, "The Neglect of the Pig Industry." The subject aroused a good discussion.

SPALDING (Average annual rainfall, 20.25in.).

November 21st.—Present: 10 members.

HAY MAKING.—Mr. A. Chase, who read a paper dealing with this subject, said the hay crop formed an important part of the harvest on every farm. The time for cutting hay was when the grain was full-sized, but still in the milky stage. At that period of growth, ears and flags would prove equally nutritious, and, if carefully cured, would show a bright green color, and a small quantity of shrivelled grain. The heaviest yields were obtained when the grain had fully reached the dough stage. To obtain the best hay it was advisable to sow early wheats with the three following characteristics:—“(1) Vigorous growth and stooling capacity, (2) abundant foliage and beardless chaff, and (3) sweetness and fineness of stem.” Late wheats, although yielding heavily under favorable conditions, were likely to bring hay cutting into harvest weather. A 6ft. binder would cut on an average about 12 acres a day. A rough estimate of the probable quantity of binder twine required could be obtained by estimating one ball (4½lbs.) for every 2 tons of hay of average length, or if the straw was very long, 2½ tons per ball. In cutting the crop, the sheaves should be tied at such a height that they would be evenly balanced. That could be done by adjusting the distance of the knoter from the butter board. The sheaves should be laid in regular rows and stooked as soon as possible, so that they would not be exposed to sudden drying influences for too long a period before being stooked. The quality of the hay was lowered by exposure to rain. Large round stooks dried more slowly, and so gave a smaller percentage of bleached sheaves than long open stooks. The former were more suitable for dry districts, whilst the latter were better for humid localities. Should heavy rain occur during that period, the stooks should be taken to pieces and made into smaller ones to facilitate drying. In that case, as soon as the hay was dry it should be carted, because if left in small stooks it would deteriorate. The sheaves should be allowed to remain in the stooks until they were sufficiently dry to stack, i.e., until they had reached the stage when they would not heat or mould when stacked. The hay should not be left any longer in the stook than was necessary to cure it. If on inspection of a handful of straws drawn out from the centre of a stook the nodes were dry, the hay could be stacked without danger. Compared with small stacks, large stacks had less waste, and a smaller face exposed. Stacks of 100 tons were a convenient size to build. A stack 66ft. x 22ft. would usually hold about 100 tons if the height to the eaves was 12ft. to 15ft. when first erected. The best method of building a stack was to begin from the outside, working always to the centre, with the butts outwards, and keeping the surface with a crown to the centre to give pitch for any water that might penetrate the roof of the stack. When building the top of the stack, the last row of sheaves should be projected 3in. to 6in. further than the previous row to make an eave. In making the roof, each successive layer should be drawn in about 6in. to 8in., the last sheaves being practically stooked on top, lightly packed together, with heads interlocked by opening and dove-tailing them with one another. The roof was the main feature governing protection from rain, and the steeper the slope of the roof the better would water run off the hay, and if a good eave projected most of the drainage would run clear of the sides; but if the stack had been so constructed that the fodder had settled with the straws having an inclination to the centre, water would be absorbed, with consequent damage to the hay. The practice of “springing” a

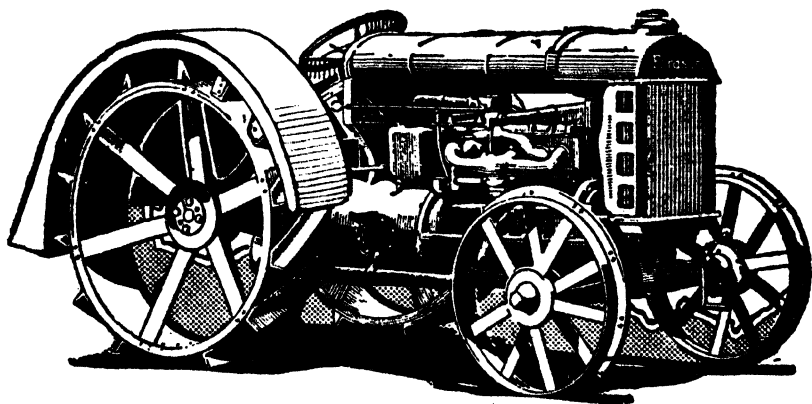
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stack, increasing its width as the construction proceeded, would undoubtedly help to turn rain from the sides. Thatching provided protection from the weather, but it would not make up for careless building. On the other hand, a well-constructed stack would turn rain, even though unthatched. Protection from mice was very important, and unless a proper base for the stack was used, some loss was inevitable. To save loss from that source, two methods were commonly adopted. First, to build the stack on a stage resting on piles 6in. in diameter and 3ft. in length, and sunk 18in. in the ground. The piles were covered with kerosene tins placed upside down, or with galvanized iron, the floor being built on joists fastened to the piles. Secondly, the stack was built on the ground or on dunnage, and a fence of plain galvanized sheet iron sunk to 6in. in the soil was erected completely around it. The amount of hay saved by such precautions would pay for the expense of making the stack mice-proof. In the discussion that followed, Mr. A. Howley favored bearded wheat, especially if a farmer had to carry over any length of time in stacks, for he considered bearded varieties less liable to be attacked by mice, and horses thrived on that class of hay. Mr. W. J. Pryde agreed regarding bearded wheat, and thought the stooks should be large ones, put together properly, but on no account should they be pulled to pieces if wet. He said he had had hay lying out until after reaping on account of shortage of time and labor, and, although last year was an exceptionally wet summer, the hay was in beautiful condition when stacked. Mr. S. Trengove thought roofing a most important factor. Mr. D. Pryde thought bearded wheats were of no value for hay, especially for old horses.

WILLIAMSTOWN.

November 7th.—Present: 19 members and two visitors.

BEE CULTURE.—In the course of an address dealing with this subject Mr. C. A. Harris (Lecturer in Beekeeping at the School of Mines) first made a brief reference to the prominence that was given the bee industry in Great Britain and the United States of America. After explaining the Nicholson portable hive containing live bees, eggs, larvae, and queen-cells which he had brought with him, and pointing out the importance of being able to tell the age of a larvae, especially up to its third day, Mr. Harris said he intended to deal with the subject, "The Metal Comb and Other Current Topics." The invention of the movable frame by Langstroth in 1853 was probably the most epoch-making event in the whole history of beekeeping. The next important invention was that of the wax foundation of Mehring, of Germany, in 1857. The extractor, invented by an Austrian, followed eight years later, and made commercial beekeeping possible. At about the same time Quinly produced the first bellows-smoker, but 60 years elapsed before any improvement was made to the comb foundation. In 1917 the MacDonald metal comb with full-sized cells was produced, and in 1920 the Admison aluminium semi-comb was placed on the market. The fine workmanship, strength, and durability of the comb were unquestionable, but the point at issue was would the bees accept it. Mr. Harris said his experience was too short to be conclusive, but up to the present time he was not favorably disposed towards it. The general finding seemed to be that the bees would store honey and pollen more or less readily, but they would reject it for brood unless it had been seasoned for some time in the super. Then there was the question, first, of expense, with regard to which a detailed comparison was made with natural comb, and, secondly, as to whether almost complete exemption from wax production might not have an injurious effect on the bees. At this stage Mr. Harris handed around a metal comb for the inspection of members. *Template for Wiring and Nailing Frames.*—Speaking principally to those who had had but little experience with bees, Mr. Harris pointed out the great saving in time that was effected by the use of a template in nailing frames together, and the speaker exhibited one of his inventions for use in the boring and hooking of end bars. *Electric Embedder.*—A device was shown for embedding wires by electricity where a power plant was available; about six amperes being all the power that was necessary. However, the lecturer did not consider the system effected any saving of time. The new American method of sterilising foul brood combs was explained, and it was considered that it would be of high value in apiaries large enough to warrant the heavy initial expense. In concluding, Mr. Harris referred to correspondence he had had with apiarists in America with reference to the wax moth and to

the great Riverside apiaries in Florida. Correspondence relating to the latter point referred to the suggestion of establishing floating apiaries on the River Murray. He hoped that when visiting the Chamber of Commerce Exhibition in March, 1925, members would make a point of inspecting the exhibit that was to be staged by the apicultural class of the School of Mines. A good discussion followed, and Mr. Harris replied to numerous questions.

BLACK SPRINGS, November 11th.—Mr. F. Coleman (member of the Advisory Board of Agriculture) delivered an address to a gathering of 18 members and a large number of visitors.

CLARE, November 14th.—The Hon. Secretary (Mr. W. H. Lewcock) read a paper, "Power Farming," which aroused an interesting discussion.

LONE PINE, November 20th.—The delegates who took part in the inspection of the top dressing experimental plots conducted by the Superphosphates Association in various districts in the hills gave an interesting report of the holdings that had been inspected.

LYNDOCH, November 6th.—Mr. A. Lawes gave a report of a trip through the Adelaide hills that had been made on the invitation of the Superphosphate Association for the purpose of inspection top dressing experiments. Mr. A. Springbett tabled samples of clover. Those that had been top dressed showed 12in. more growth than those that had not been treated with super.

SADDLEWORTH WOMEN'S, November 13th.—The monthly meeting was held at the residence of Mrs. Frost. Afternoon tea was served, and members and visitors inspected the flower and vegetable garden, orchard, poultry yard,

STOCKPORT, November 13th.—The delegates who attended the tour of inspection arranged by the Superphosphate Association gave interesting reports of the top-dressing experiments that were being carried on in the Adelaide Hills and Southern Districts. incubators, &c.

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WILLIAMSTOWN, December 12th.—Mr. C. H. Fromm read a paper, "Harvesting Cereal Crops and Management of Farm Machinery." A report of the tour of inspection of top-dressing experiments, arranged by the Superphosphates Association, was given by Mr. D. Manser.

YORKE PENINSULA DISTRICT.

(TO BUTE.)

MOONTA, November 15th.—Eleven members attended the November meeting, when Messrs. H. B. Ferguson and W. J. Brinkworth related interesting experiences dealing with a visit they had recently made to Western Australia.

PASKEVILLE, November 11th.—The Hon. Secretary (Mr. J. C. Prouse) read an article, "The Blowfly Pest," and an interesting discussion followed.

WESTERN DISTRICT.

CHARRA.

November 5th.—Present: 12 members.

WATER CONSERVATION.—"I consider that the proper development of this district will never be brought about until settlers give this all-important question more serious consideration," said the Hon. Secretary (Mr. E. A. Denton), in the course of a paper dealing with "Water Conservation." Experience in the past, he said, had not only brought home to farmers the serious loss of livestock, through lack of water in drought times, but also the waste of labor of one man and a team of horses which could be more profitably used on the farm. In their district, where good stock water was seldom found by boring, the catchment of surface water had to be resorted to. To do that, tanks were necessary to tide over dry seasons. In droughty seasons it would be observed that rain frequently fell over only a small portion of land, and very often a shower would pass over a narrow strip of a section, whilst the rest remained perfectly dry. Therefore, he suggested that smaller tanks should be built and distributed over the holding. He gave preference to small tanks, say, 15,000galls. to 20,000galls., because small tanks could be emptied and cleaned out more frequently, thereby guarding stock against diseases arising from germs which bred in the filth lying at the bottom of tanks. To construct a tank, he favored keeping the corners round; they were more easily worked, and less liable to burst. One part of lime to three parts of good, clean rubble made a reliable concrete for small tanks, and if mixed stiffly, and put on the wall about 4in. thick, would make a good and lasting job. Care should be taken to avoid mixing the concrete too thinly, because too much water had a tendency to weaken the tank. The concrete should be thoroughly dry before putting on the cement coat, because the walls were liable to shrink and crack. Three parts of good clean washed road sand to one of cement, thoroughly mixed, made a good cement coat. Finally a coat of good thick tar should be applied to close up any air cracks. In the discussion that followed, Messrs. E. Mewett, G. Denton, and A. Haseldine favored approaching the Government to try for artesian water. Other members strongly supported putting down enough tanks for a two-years' supply. Mr. G. W. Denton thought reinforced concrete would be cheaper and stronger than lime concrete. Mr. A. Haseldine also supported that

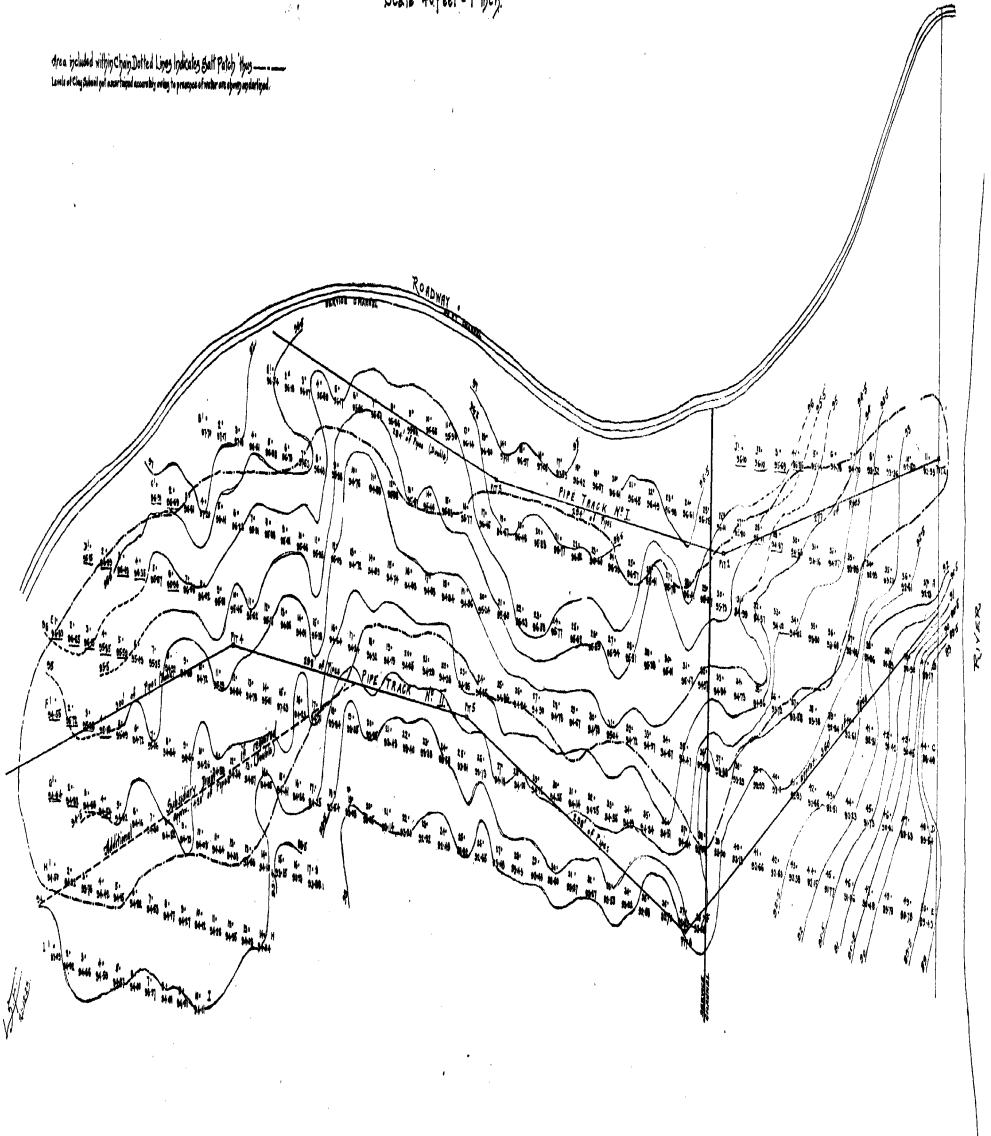
McLACHLAN.

November 1st.—Present: five members and four visitors.

HAY MAKING.—In the course of a short paper dealing with this subject Mr. T. Puckridge, after emphasising the necessity for thoroughly overhauling the binder, referred to the kind of hay and the time of cutting the crop, expressing a preference for oaten hay cut when nearly ripe. Wheaten hay, he thought, should be cut just after the blossoms had fallen. He favored a round stack, built

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SALT PATCH BELOW 40 FT CHANNEL ON BLOCKS F & G in 1923.
Plan showing CANYON SUBSOIL LEVELS & CANYONS in GREEN.
Scale 40 Feet = 1 Inch.

Area is included within Chain Dotted Lines indicates Salt Patch Area.
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with the outside sheaves on the edge and the butts out, and the inside sheaves heads out on the flat. The stack should be filled and finished off with three rows of sheaves placed lengthways, which, if pegged, seldom shifted. In answer to questions, Mr. Puckridge stated that if a stack were given a good batter eaves were unnecessary in their comparatively dry district, and as most farmers usually only cut one year's supply, thatching also was not required. Size of stooks depended on whether the hay had to stand in the field until after harvest, or whether it was to be stacked immediately it was ready. In the latter case, 15 to 20 sheaves could be placed in a stook, whilst for the former 30 to 40 were recommended.

STREAKY BAY.

November 8th.—Present: 12 members.

CARE OF HORSES' FEET.—In the course of a paper dealing with this subject Mr. Thom first gave a description of the internal structure of the foot of the horse. Continuing, he said the front feet were more sensitive than the hind feet, and it was to the former that he wished to confine his remarks. The leaves or laminae of the feet were very sensitive, and carried almost the whole weight of the horse, and the farmer could, with a little thought and care save the horses a good deal of suffering by keeping the feet as level as possible. When the hoof was allowed to grow beyond the proper size, and it would be noticed that most horses wore more heavily on the outside of the hoof than they did on the inside, the gradual altering of the level of the foot threw the sensitive laminae out of proper position. The process being slow and continuous, the horse showed but little signs of discomfort, yet the injury was being done. It was when the horse had to be taken to the blacksmith to be shod that the trouble commenced. The blacksmith had to cut away the high growth from the inner side of the hoof to bring the foot back to its proper level. That sudden alteration of the alignment of the foot often caused lameness in the horse. When that occurred the farmer very often blamed the blacksmith, when it was the farmer who was to blame. When the farmer noticed the hoof of the horse becoming misshapen he should cut the uneven growth away, and much of the trouble would be saved. If the hoof was kept level and about the proper size the horse would travel farther, pull more, and not become so easily fatigued as he would if the feet were not cared for. The speaker stated that he was dealing with horses working on sandy country where they seldom required shoeing.

Mr. J. Mudge who had just returned from a trip to England, Canada, and the Continent read an interesting paper relating to the agricultural and stock-raising industries in those countries.

DARKE'S PEAK, September 20th.—The Hon. Secretary (Mr. T. R. Morton) gave a short address and a practical demonstration on the preparation of a small clip for market.

A further meeting was held on November 11th, when an interesting paper, "Stack Building," was read by Mr. C. A. Noble. A good discussion followed.

GREEN PATCH, November 13th.—The monthly meeting was held at Mr. D. Murray's homestead. Mr. E. Sage reported on the proceedings of the Minnipa Conference, and members discussed the subject, "Coast Disease in Sheep." The opportunity was also taken of inspecting the crops, amongst which were noticed excellent crops of Calcutta oats and a fine crop of wheat which was expected to yield 24bush. to the acre.

POOCHERA, November 19th.—Sixteen members and a large number of visitors attended the meeting when the Manager of the Minnipa Experimental Farm (Mr. R. Hill) delivered an address in which he dealt with the subjects, "Pickling Wheat" and "Preparation of Fallow."

ROBERTS and VERRAN, November 6th.—A paper, "Power Farming," was read by the Hon. Secretary (Mr. B. Evans), and an interesting discussion followed.

EASTERN DISTRICT.

COBDOGLA.

November 13th.—Present: eight members.

QUESTION BOX.—The meeting took the form of a "Question Box." The first subject to be discussed was, "Which gives better results, cultivating or ploughing in gypsum?" Mr. McGuire favored ploughing. He had experimented with both methods on lucerne and vine land, and found that ploughed in gypsum permeated the ground, because it apparently worked upwards more effectively than downwards. Mr. English favored ploughing in. "Does it pay to cincture vines under 2in. in diameter?" The general opinion was that if vines lin. or less in diameter were to be cinctured a single cut should be made, but for larger vines a double cut should be made. "Which is the best all-round rack, a six or eight tier, or a 4ft. or 5ft. tier?" The discussion reduced itself to a two-sided decision, viz., that the 4ft. rack enabled the fruit to be dried easily and rapidly, whilst the 5ft. had capacity in its favor. The eight-tiered rack allowed an extra amount of fruit to be dried at one time, but many growers, whilst glad of the extra space in times of emergency, experienced difficulty in spreading and rubbing off when using the upper tiers. "Which is the more conveniently-sized tray for drying apricots, 4ft. x 3ft. or 3ft. x 2ft.?" The 3ft. x 2ft. tray was almost unanimously favored for three main reasons:—(1) Durability, due to less strain than that to which the larger size would be subjected, and also through being lighter they would receive better treatment from workers handling them; (2) because it was a cheaper proposition, and cost less proportionately than the larger size; and (3) because of the ease and greater speed in handling, especially when emergency stacking against rain was done. "Which is productive of better results, topping of ripening currants or not." Growers favored leaving the tops, because topping caused uneven ripening, and the consequent annoyance of a heavier second crop and a lighter first crop.

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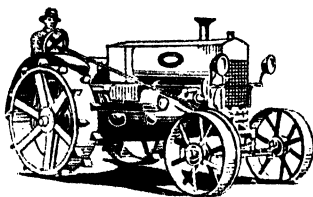
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BARMERA, November 22nd.—Mr. A. T. Coats, a member of the Cobdogla Branch, delivered an instructive address, "Vegetable Growing," at a well-attended meeting of members and visitors.

BARMERA, December 8th.—Mr. G. C. Jackson (Hon. Secretary of the Glossop Branch) delivered an interesting address, "The Horse," and replied to numerous questions.

BRINKLEY, November 8th.—A member contributed a paper, "Artificial Feeding of Sheep," and a keen discussion ensued.

GLOSSOP, November 12th.—Interesting addresses, "The early History of Fruit Drying," were given by Messrs. Little & Sons. Mr. M. Little explained the working of a dehydrator.

MONARTO SOUTH, November 8th.—The Hon. Secretary (Mr. C. Altmann) read a paper, "Power Farming," which aroused an instructive discussion.

RENMARK, November 6th.—Twenty-two members attended the November meeting when a paper, "Australia's Agrarian Wealth," was read by Mr. T. C. Angove. The chairman (Mr. F. Hooper) then presented certificates to those members who had been successful in the 1924 River Murray Pruning Competitions.

WYNARKA, November 12th.—There was a good attendance of members at the November meeting. Mr. Hood gave a report of the proceedings of the Annual Congress, and Mr. Yeates, who recently inspected the experimental plots at Yurgo, conducted under the supervision of Mr. C. Sanders, gave an interesting description of the various wheat and manurial experiments.

[The results of these experiments will be published in the *Journal*.—Ed.]

YOUNGHUSBAND, November 13th.—Mr. G. H. Mann read a paper, "Feeding for Production," which had been presented at the Annual Congress. Mr. Mann also gave an interesting demonstration, "Mending Farm Implement Bearings with White Metal."

SOUTH AND HILLS DISTRICT.

HARTLEY (Average annual rainfall, 15in. to 16in.).

September 17th.—Present: 12 members.

LUCERNE GROWING.—Mr. J. S. Harvey, who read a short paper dealing with this subject, said before the seed was sown the land should be fallowed to a depth of 6in. Seed should be sown during May, at the rate of 14lbs. of seed and 2cwt. of super to the acre. The young lucerne should not be allowed to seed for two years, in order to allow the roots to become firmly established. The lucerne should be cut or fed off with cattle and horses; sheep should not be allowed to graze on the crop, because they ate out the hearts of the plants. The crop should be cultivated every year during August, and dressed with about 90lbs. of super to the acre. The lucerne should be cut again in October, and then allowed to seed. The seed would be ready for reaping when most of the pods had turned a black color. The crop should be reaped with a stripper, fitted with a lucerne comb, and then put through a caver with $\frac{1}{2}$ in. mesh netting to remove the stems. It should be winnowed without delay, because if left in a heap it would heat. The seed should be put through a sieve with 14 wires to the inch, and dried in the sun for a day, and then blown with the winnower. A report of the Annual Congress was given by Mr. H. Stanton.

A further meeting was held on November 5th, when a paper, "Power Farming," was read by the Hon. Secretary (Mr. W. B. Hudd).

LONGWOOD (Average annual rainfall, 37in. to 38in.)

November 8th.—Present: six members and visitors.

STRAWBERRY CULTURE.—The November meeting was held at the homestead of Mr. R. Higgins. Members inspected the orchard and garden, and a fine pasture of subterranean clover was noticed. Mr. R. Higgins, in the course of a paper dealing with strawberry culture, said he followed the hilling system in cultivating strawberries, and had found it satisfactory. The soil was first thoroughly and deeply cultivated, and the plants spaced 15in. apart in rows 2ft. 6in. apart.

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A. SAIDE, A.F.I.A., Secretary
(Late of Federal Taxation Dept.).

The usual time to set out the plants was during June, July, and early in August. They required a good deal of attention in hoeing, mulching, and weeding, and if the runners were continually nipped off, the quality of the fruit was improved, and there was an increase in berries. A good discussion followed, members being of the opinion that strawberries were a profitable crop. The hilling-up system was not generally followed, because it was advisable to cultivate the land deeply, so that the probable life of the plants would be extended. Bonedust should be liberally supplied each season, because strawberries were a shallow-rooted crop. Cultivation should be done carefully in order not to disturb the roots of the plants. Land intended for an orchard would be considerably improved if first used for growing strawberries. The trees could be planted amongst the strawberries. The income from the strawberries would cover the outlay of working the land and bringing the fruit trees into bearing. As the trees developed, a portion of the bushes could be turned in each year, until the whole of the piece of land was absorbed by the fruit trees. One member by that method had received £75 for strawberries from an acre for one year. Melba was one of the varieties that grew well under irrigation, and could be planted in rich deep soil in the gullies. Varieties recommended were Gandy, Margaret, Sunbeam, and Melba. Sunbeam, although a good sort, did not carry so well as the others.

McLAREN FLAT.

Present: 34 members and 5 visitors.

COLT BREAKING.—Mr. K. Robertson read the following paper:—"The first point in the handling and breaking of draught horses on the farm is to see to the tackling. The most simple gear procurable is an ordinary bridle with a bar bit, and a surcingle with two rings attached, so that when placed on the back of the colt it will lie in position similar to the rings on a spring cart saddle. A crupper, stirrup leather, pair of plough reins, a hemp halter, and a piece of 2in. rope about 10ft. in length are also required. Most of these will be found in use on the average farm, and they suit the purpose just as well as an expensive set of tackling. In addition to the above, two small saplings about 9ft. in length by 2in. in circumference, with a piece of bag attached to the small end of one of them, will prove very handy. Breaking in commences the moment you step into the yard with a colt, so be perfectly confident that you are capable of mastering the colt. It is a grave mistake to illtreat the colt simply because it rushes around or kicks occasionally or does not do just what is required. Hit the colt hard when necessary, but make amends at the very first opportunity afterwards by petting it. Always be patient and firm, but not cruel. Take hold of the stick with the bag attached and run the colt a few minutes around the yard with the bag flapping and touching it, from the nose to the heels, under the flank, and anywhere where the animal can be touched. Make the colt run round first on the near side then on the off, and continue this until all signs of fear of the bag have disappeared. Keep on the near side of the colt to do most of the work, and only go to the off side when it is necessary to fix the gear. Place the head of the halter on the end of the other stick, loosen the noose of the halter, leaving about 2ft. of slack rope, wind the rest of the slack loosely along the end of the stick, and it will be possible to slip the halter on the head of the colt quite easily. Next go to the front of the colt and walk very quietly with the arm fully extended towards the animal. When within reaching distance stop, but keep the arm extended until the colt smolls the hand. Once it has done this the fear that it had of the coltbreaker will soon disappear. Whilst approaching the head of the colt, keep the end of the halter in the other hand, so that the head of the animal will be kept straight and so prevent it from getting away. After the colt has become accustomed to petting, start to give it the first lesson in leading. Take hold of the halter shank and pull first to the left and then the right. Keep these methods up for about 15 minutes, stopping at short intervals to pet the colt and loosen the halter under the chin. Then get the bridle, first taking off the reins, and slip it on, leaving the bit out of the mouth until the head stall is placed in position. Putting the bit in the mouth often proves a tedious job. The best plan is to place the right hand lightly just above the nostrils and slip the thumb in the mouth just above the hind teeth; this tends to make the colt open its mouth. Hold the

strap or clip attached to the bit in the left hand, and as soon as the mouth is open slip the bit in quickly, but gently. Watch the colt closely whilst this is being done, for very often when the colt finds that the bit cannot be slipped out it will strike. Put the plough reins around the neck of the colt and slip the end of each rein through the rings on the bit and pull first to the near side, and then to the off, similar to the way in which the halter was pulled. This will be the first lesson in mouthing and should be continued for about 15 minutes. Get the stirrup leather and pick up the near front leg and tie it by running the strap around the fetlock twice, then over the leg just above the knee, and finally buckle the strap. Leave the leg strapped whilst putting the roller and crupper in position. Next tie one of the reins to the bit on the off side, run it through the ring on the roller, passing it over to the near side across the back, and put it through the ring on the near side of the roller on to the bit. Before fastening it on to the bit on the near side, slacken the rein enough to allow it to slip over the rump and lie in the position of a bridle. Pull the rein until it is taut on both sides, let the leg down, make the colt run around the yard a time or two, and then give the animal a rest. With the mouthing reins fixed in this way, the colt practically mouths itself. It is a running rein, so that whichever way the colt turns its head it will tighten the rein, and when it is going straight both reins have the same pressure, thus preventing the mouth becoming more sore on one side than on the other. In other words, it minimises the likelihood of a 'lop-sided' horse when it is broken in. The next work is to remove the mouthing rein and put on a pair of reins in the ordinary way and drive the colt around the yard a few times. Care should be taken to pull only on the rein in the direction in which the colt is to turn. The best method is to drive the colt around first on one rein, then on the other. This can be continued for about 20 minutes, then the mouthing rein can again be attached and the colt left for the rest of the day. All gear, with the exception of the halter, should be removed at the end of the first day. Open the gate and allow the colt to walk out at its leisure. In the morning catch and lead the colt around the yard a few times, put on the tackling and driving reins and give the animal a few turns around the yard. By this time the colt should be sufficiently mastered to enable it to be controlled outside the enclosure. The gate can be opened and the colt driven out. If it tries to rush through, drive it back again until it goes quietly. Drive it about the paddock for 20 minutes, then go back and take off the tackling and prepare to tie up the colt. Procure a good strong chaff bag, roll it up to the shape of a collar, and place it around the neck of the colt, being careful to tie it tightly enough to prevent the head from slipping through when the colt pulls back. The 10ft. piece of rope should be tied securely on to the bag and the colt led up to a tree or a strong post and tied up, leaving about 3ft. of slack rope. The stick with the bag should then be rubbed over the colt, and this can be continued until the animal ceases pulling back. The colt should be allowed to remain tied up for an hour or two. It can then be taken back into the yard and harnessed with an open bridle, collar, harness, and chains, and driven once or twice around the yard. A sledge should be prepared; a forked tree weighing 2cwts. or 3cwts. will be a good substitute. Nail a few flat boards across the fork. Lead the colt out and yoke it to the sledge and allow the colt to stand for a few minutes to become accustomed to the harness. When starting, be very careful to allow plenty of rein. This will prevent the mouth of the colt being jerked if it goes off with a bound. If the colt is not anxious to pull, do not try to force it too much, but leave it there long enough to let the animal know that it has got something behind it. On the other hand, if the colt moves forward keep it working for about half an hour, stopping and starting at frequent intervals, stepping on to the sledge occasionally just before it is time to unyoke it from the sledge. The colt can then be placed in the stable for a spell, whilst the trolley is being prepared. A quiet, staunch horse should be obtained and coupled with the colt by the necks as well as the mouths. Drive them around together for a few minutes, then leave them standing in front of the trolley while the pole is pushed up between them. A man to help at this juncture is very handy and practically essential for an amateur. The two horses, after being allowed to stand quietly for a minute or two, can be driven for about two or three miles. Put the colt in every day for a few days, making the journey slightly longer

on each occasion. The colt should now be ready to take a place in the team, or do light work in the trolly. If possible, a colt should always be driven in double harness before single, because it teaches the animal to pull and work in a straight direction."

MOUNT PLEASANT (Average annual rainfall, 26.87in.).

November 25th.—Present: 11 members.

HOMESTEAD MEETING.—Members met at Mr. C. Royal's homestead for the purpose of inspecting a crop that had been grown on fallow land. The crop proved to be a magnificent one, and showed, to the satisfaction of all present, that fallow land, regularly and systematically worked, was a paying proposition in that district. It was noticed that there was an almost total absence of sorrel and other weeds. After the inspection, members were provided with afternoon tea by Mrs. Royal. Members then motored to Mr. J. S. Miller's property, and there inspected fine and even crops of various kinds of wheat. Several experiments were being conducted by Mr. Miller, and a strip of wheat sown without super was particularly noted. This had not stood at all, and was at least 23in. shorter than that which had been dressed with manure. A move was then made to Mr. W. T. Vigar's farm, where a striking illustration of the effects of topdressing was seen. One paddock that had been dressed for two consecutive years was covered with a dense mass of Subterranean clover, approximately 18in. high. The carrying capacity of the paddock, Mr. Vigar stated, had been more than doubled.

PENNESHAU.

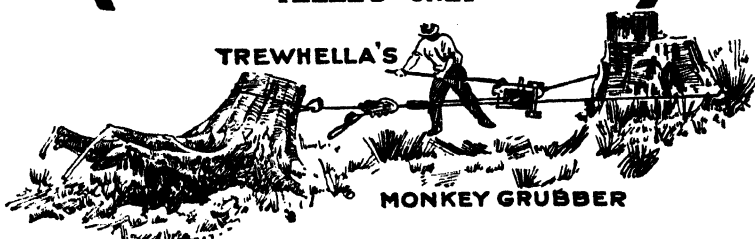
November 29th.—Present: 14 members.

TOP DRESSING OF IRONSTONE LAND.—In the course of a paper dealing with this subject the Hon. Secretary (Mr. E. L. Bates) said he intended to deal with the subject as applied to ironstone land on Kangaroo Island. That class of land had hitherto been regarded as almost useless, even though farmers on many parts of the island had succeeded in clearing it. In its natural state, it had given very small returns as a grazing proposition. The undergrowth known on the island as stinkbush, brimstone bush, and prickly bush, apart from the eucalyptus shoots, made clearing a difficult operation. The usual method was to roll and burn the scrub, and sow a crop of oats, with the hope of getting a fire over the land the second year. If that could be done, it tended to check the shoots and undergrowth, but more often than not the growth of oat stubble was not thick enough to carry a fire, and the state of the land the second year was often worse than the first. Then the plough was worked, the undergrowth turned under, and the shoots destroyed as much as possible. Perhaps another crops of oats was put in, and the growth would not be nearly so good as in the first year, with the result that practically no stubble was available for burning, chiefly from the fact that the ground was sour from the effects of the roots of shoots and undergrowth. He had noticed that process go on year after year, and perhaps in the end the farmer gave up in despair, and it was not long before the plot of land was covered with a denser growth of scrub than it originally carried, the result being that the whole business had been a losing one from start to finish, principally because it was impossible to get a second fire over the land, thereby enabling the shoots and bush to get another start. He had come to the conclusion that the difficulty could be overcome to a great extent by introducing sufficient seed of local grasses with oats to help carry a fire the second year. Then, when there was plenty of grass seed on the land, he proposed ploughing lightly and top dressing with 45 per cent. superphosphate. A few head of livestock could be grazed, and it should be no trouble to make another burn, by which time the undergrowth would be thinned out and the shoots become very sickly. If top dressing were continued, he believed the land would soon become cleared and return a profit. He had been experimenting for a couple of years, and had had splendid results. Last year he sowed silver grass and top dressed with 120lbs. of 45 per cent. superphosphate, and this year the grass was very thick, and grew to a height of 18in. The scrub was not rolled, but burned and ploughed with a tractor and disc plough. The grass was quite thick enough to carry a fire. He had cut it for seed, and hoped now to get a fire over it. Side by side he had a patch sown and threshed in the

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same way, only without top dressing, and the grass was scarcely visible, being only about 2in. high, and about two stems to the square yard. Several local farmers had seen the patch and were surprised at the effect of the super. With a little energy and enterprise thousands of acres of the so-called useless ironstone ground could be brought into profitable use, first with local grass, and later with Subterranean clover, which did well on that class of land.

SHOAL BAY.

November 5th.—Present: 14 members.

HAND-FEEDING SHEEP.—In the course of a paper dealing with this subject, Mr. A. Nash said if a farmer desired to keep his sheep in proper order and condition, hand feeding was essential. The feed should be of good quality and cleanly cut, otherwise the sheep would not thrive and the feed would be wasted. He suggested that the chaff should be cut not more than ½in. in length. Long straws in the chaff blocked the feeder, and the sheep would not obtain the maximum amount of feed. Feeding should be commenced about the end of January or early in February, so that a considerable amount of the natural pastures would be available, and the sheep would have a better chance of holding condition. He favored feeding three times a day, and considered that where hand feeding was resorted to a self feeder large enough to hold about 10 bags of chaff should be installed. The full amount of fodder should not be put in at once; if it were, the chaff would “bridge” and not run freely. The feeder should be bolted on to a grating wide enough to give the sheep ample standing room to feed properly. That plan kept the sheep off the ground, and it was always dry under foot, which was most essential. Wheels should be attached to the back and front of the feeder to enable it to be drawn about the paddock when necessary. About 1lb. to 1½lbs. of chaff per head per day should be allowed until the commencement of winter, when he advocated mixing about 3lbs. of crushed oats or barley to every bag of chaff. That should be continued through the winter until there was sufficient green pasture available to keep the sheep going.

STIRLING.

November 22nd.—Present: nine members.

THE CULTURE OF ANTIRRHINUMS.—In the course of a short paper dealing with this subject, Mr. W. Hocking said the soil needed for antirrhinums was generally a light, poor one, and he had grown very fine blooms without manure. The plants seemed to thrive well without any great quantity of water. The seeds should be sown in boxes about August, and then pricked out and planted when about 2in. high, and blooms should be available in November and December. It was a plant that needed very little attention. In the discussion that followed, Mr. H. Mountford said he found that mulching tended to increase the growth of the foliage at the expense of the flowers. He also obtained the best blooms from gravelly soil. Mr. Hocking, asked what varieties he favored, expressed a preference for striped or art shades, particularly the variety *Major Grandiflora*. Messrs. Noble, Probert, and Smith also took part in the discussion. Mr. A. Gander had found that antirrhinums would not stand cutting back to any extent in the hills.

BLACKHEATH, December 13th.—A paper from the *Journal of Agriculture*, “Sheep Management,” was read by Mr. E. H. Pym, and an instructive discussion ensued.

CHERRY GARDENS, November 11th.—Mr. H. Strange read a paper, “Power Farming,” and an interesting discussion followed.

IRONBANK, December 5th.—The subject “Cultivation of Strawberries” was brought before the meeting, and a keen discussion took place.

McLAREN FLAT, December 11th.—The Government Poultry Expert (Mr. D. F. Laurie) delivered an address, “The Poultry Industry,” to an attendance of 30 members and several visitors.

MOUNT PLEASANT, November 14th.—The Hon. Secretary (Mr. P. Hamester) read an article, “In Praise of Pigs,” which aroused a keen discussion.

PORT ELLIOT, October 18th.—Messrs. J. Brown and J. Colebatch gave a report of the Annual Congress, which aroused an interesting discussion.

A further meeting was held on November 15th, when a paper, "Power on the Farm," was read and discussed.

RAPID BAY, November 15th.—The Hon. Secretary (Mr. A. J. Grundy) read extracts from the departmental bulletin, "Some Sheep Worms," which aroused an instructive discussion.

ROCKWOOD, November 10th.—A paper, "Some Aspects of Power Farming," was read by the Hon. Secretary (Mr. M. Meyer), and an instructive discussion ensued.

SHOAL BAY, December 9th.—The meeting was devoted to a discussion on matters connected with the Conference of Kangaroo Island Branches of the Agricultural Bureau, which it is proposed to hold at Kingscote during February, 1925.

TWEEDVALE, November 13th.—Thirty-seven members and four visitors attended the November meeting, which took the form of a "Question Box," when several subjects of local interest were brought forward for discussion.

TWEEDVALE, December 11th.—Mr. P. C. Henschke delivered an address, "Co-operative Marketing of Produce," to a gathering of 26 members and visitors, and an interesting discussion followed.

SOUTH-EAST DISTRICT.

LUCINDALE (Average annual rainfall, 23.32in.).

December 6th.—Present: 11 members.

SUBTERRANEAN CLOVER.—In the course of a short address dealing with this subject, the Hon. Secretary (Mr. W. Smith) recommended a more extensive sowing of Subterranean clover seed as a means of improving pastures where a sufficient average rainfall could be counted upon. To obtain best results it was necessary to sow the seed early, from March to May, and to topdress with 2cwts. of superphosphate. The following points were advanced in favor of Subterranean clover:—"It reseeds itself wonderfully; it responds to top dressing remarkably well; it increases the fertility of the soil by adding humus and nitrogen; it forms a well-balanced ration either as green fodder or hay; it may be cultivated to any reasonable degree without fear of extermination; one sowing, if a good stand is obtained, will last a life time, because the husks of the seed remain impervious to rain and heat for a very long period; and supplies of seed are easily obtainable at reasonable rates." Mr. T. J. Ferguson asked whether sheep grazing upon Subterranean clover would be subject to foot rot, and in reply an instance was cited where in the pug soils of Victoria foot rot had been prevalent previous to the sowing of clover, yet since its establishment the disease had not made its reappearance. Mr. W. M. Secker asked whether it would be advisable to cultivate land previous to sowing the seed. Mr. Smith replied in the affirmative, but pointed out that cultivation was not essential. One member remarked that first-year sowings were not showing to good effect upon gravelly banks, and he was advised to topdress the land with superphosphate in liberal quantities. Mr. C. Williams stated that stock were avoiding patches of clover in his paddocks. Mr. Smith considered that was probably due to the plants coming from and growing upon stock droppings. To counteract that, harrowing with the first rains was recommended.

A report of a trip through the hills by Bureau delegates to inspect top-dressing experiments was also read and discussed.

MOUNT GAMBIER (Average annual rainfall, 32in.).

November 8th.

THE GROWING OF SOFT WOODS.—"Is the Remarkable pine the most suitable for our district?" was the question asked by Mr. R. P. Pritchard in introducing a subject for discussion. He held that the Remarkable pine, which was grown so extensively in the South-East, was not the best variety for soft wood purposes. It was not a suitable tree for staple planting. The wood of the Remarkable pine did not keep its shape when cut, and it was subject to warping tendencies.

The time was at hand when there would be a world shortage of soft wood, and it was therefore necessary to have large plantations of suitable timber. He thought the Californian red pine should be grown extensively. It yielded wood suitable for cabinet and furniture work. He contended that investigations should be made in order to select a variety which would yield soft wood suitable for the better class of work. The chairman said they should not lose sight of the native hardwoods, which also grew very well in this district. It would be wise for the Government to set aside areas on which stringybark or Australian oak was growing. They required hardwoods for flooring and other purposes. Mr. John Davidson supported the contention that the forests should contain more varieties of trees. Mr. A. J. Hemmings, in charge of the Caroline forest, agreed with the previous speaker. They should experiment with many timbers, with the idea of ascertaining the variety or varieties which would grow to the best advantage. So far as South Australia was concerned, the experiments of the Government with Californian Red pine had not been very successful. This variety took a much longer period to reach maturity than Remarkable pine. The great trouble with the Insignis was that the trees were grown too far apart, with the result that the timber sawn from it contained many knots. However, he had seen pieces of Insignis tongued and grooved, and it was almost impossible to tell where the join was. There had been endeavors to grow another variety of pine (*Pinus maritima*), which, in its native habitat, grew with much success as *Pinus insignis* did in the South-East. It was found, however, that it took longer to mature, and did not then reach such large proportions. He supported the suggestion that the native forests of stringy bark should be protected.

TANTANOOLA.

June.—Present: 12 members.

BOYS AND GIRLS' CLUBS.—Mr. E. J. Pryor read the following paper:—"In referring to this aspect of education as it is found in Canada and the United States, and which it is proposed to introduce in South Australia, I desire to point out that the aim is not to create farmers; it is a more general one. The object of the scheme is to give every boy a deeper interest in his environment. Each and every one has a hobby. The hobby that creates and holds interest is the one from which monetary as well as educational benefit is derived. This axiom has been used as a motto by those who wished to stimulate youthful interest in the various aspects of rural industry. The work should begin at school, where the student will gain concentrated experience in preparation for life. Therefore, it is not out of place to begin acquiring hobbies in school. It is left to the child to choose a project or hobby in which he is interested. It may be vegetable raising in a kitchen garden, raising three hens, or a pig, or a calf. The child may be interested in blood stock, or pigeons for table consumption, or cotton raising, wheat selection, or some other phase of rural life. Each child must choose one of these greater projects, or two lesser ones. As the work is to be educational, the child must be put in sole charge of whatever he is to rear, say, hens or calves. He must attend to the watering, feeding, etc., of the animals. Possibly some farmers will voice a protest, 'What will happen to the stock if he has control?' If the farmer is in doubt regarding any phase of the work connected with his farm he seeks enlightenment, and this is what the child will do. The majority of farmers in this district are acquainted with the discipline of looking after cows. The cows are cared for, they are the property of the farmer, and the owner suffers if they are neglected. The basis of this contention is that the thing cared for shall be the property of the boy. For the sake of an illustration, let us say that the project scheme is in full swing in the school. What is the result? Several boys have a common interest. They are rearing a pig or a calf. They, therefore, join in a school pig or calf club. What do they then do? They get into touch with a man who knows something about pigs or calves. Here I would pay a compliment to these men. I have never met more considerate men. They suffer a novice gladly, and answer questions, and give information gratis. This enthusiast becomes a leader. He leads the club, and shows the students the points of an animal. He discusses food values, treatment of illnesses, and many other items of interest to the pig or calf breeder. He also will suffer the company of that inquisitive person, the teacher, who is endeavoring to increase his store of knowledge. That

is the local school club. The upper organisation is a district club composed of delegates from the school clubs, added to which are persons of authority in the central town of the district. This deals with matters such as show exhibits by the various clubs, and marketing of the fattened animal in the case of pigs, or sale of the product in others. It may be argued that every boy is not financially able to run a pig or a calf, but in Canada when such is the case, the boy approaches the banker of his market town and says, 'I am a member of the school pig club, I have no pig, but I could buy one if I had the money.' The banker reflects that the pigs that are to be purchased are of a good breed, and offers the purchase price on the boy's note of hand, payable, say, in three or six months. It is recognised that the note is illegal and valueless, but is accepted, and the pig or pigs are insured by the bank in its own interest, the insurance being charged to the boy. It is a reflection, very opportune perhaps to make, that despite the absence of legal liability in regard to these notes in no case has a boy failed to meet his note to the knowledge of the Canadian supervising authorities. The boy has now to raise his animal or animals from the weaner stage to marketable produce. He imbibes information from his leader, and finally the club secures a carload or vanload for market. Under advice from the central committee as to favorable times and places, the animals are marketed. One boy is sent to watch the selling of the stock, with orders to report to the club on his return. Thus he obtains business education as well as information regarding animal husbandry. What becomes of the money? It is used to clear the liability to the bank and pay the feed bill, but the balance is his own. Sometimes the boy is unable, through sickness of his charge, to meet his liability to the bank at the due date. So he interviews the banker and extends his note, paying for the privilege, and gaining more experience. Furthermore, the central committee arrange fairs or shows in which the children compete with exhibits. Each child in, say, a pig club, is given a card, before the judging begins he judges the stock himself by what he has learned from his leader. Thus, discrimination and judgment are encouraged, and a fruitful ground for discussion is thrown open. In South Australia it is hoped that the agricultural

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shows will be interested in this direction. A hope is held that the Government will subsidise any prize money devoted to this section, and that it will have a stimulating effect on the animal section of some shows, which are practically moribund. In Canada and the United States these clubs are extraordinarily vigorous. In Manitoba, the Canadian wheat province, they form a special section of the Education Department with a special officer in charge. Practically every rural school organises one or more clubs. The question then arises, 'What provision is made for the girls?' They have domestic science classes, and in autumn join canning and bottling clubs, which convert fruit and vegetables from home or school gardens into sauces, pickles, jams, and preserves. They are thus eligible to compete in the cooking and preserving sections of the shows and vegetable and flower sections."

TANTANOOLA.

December 6th.—Present: 14 members and visitors.

RURAL DENMARK.—The Hon. Secretary (Mr. R. Campbell) read the following paper:—Mr. Frank Tate, Director of Education in Victoria, embodies in a pamphlet entitled "Some Lessons from Rural Denmark," his impressions of that wonderful little country which lifted itself from abject rural poverty to being the wealthiest agricultural country in the world. Victoria and New South Wales have gone further in the matter of co-operative self help than we have, but even in these two States the hand of the mere commercialist lays a heavy toll on the shoulders of the rural producer, and there are many so-called co-operative societies and companies trading under the name which are only limited liability companies with an open share list. Denmark did better than this, for it made such a name for itself among its rural producers that it was only necessary to subscribe a small portion of the required capital to found a rural co-operative society to serve themselves, and the banks and the Government came to their assistance with advances or subventions. Denmark is a very small country of less than 17,000 square miles, and would thus be about one-fifth the size of the State of Victoria, and about the same as that portion of our own State comprising the area between Tantanoola and Murray Bridge. It has not even the advantage of continuity of area, for it is broken up into fantastic shapes by the sea, and has one large peninsula and over 40 islands, which make travel and communication through the country most difficult. Travelling by rail from Copenhagen to Egsberg, the train is twice ferried across estuaries of the sea of considerable width. The country is almost a dead level, and in no part is there an altitude of more than 500ft. It is unprotected from the gelid winds which come from the north-west in the long winter seasons, and unlike ourselves, who run our milch cows in the open all the year round, they have to stall-feed theirs for many months in the year. This spells intense culture, and an improvement of their dairy stock, far from which we have yet attained, for it does not pay to house poor milkers. Much of their feed is imported from England, and is the offal of Australian wheat. The soil is of the lighter kind, and in many parts is distinctly poor, but they have long practised what we are only just learning, viz., that you cannot keep on taking out of the soil its fertility, and from poor land profitable results cannot be obtained unless the fertility is supplied artificially. We are now learning this from topdressing experiments. Had it not been for phosphates these drained areas would long since have been sheep or cattle runs under a meagre population. But contrast Denmark with all her disadvantages carrying on the above-mentioned area a population more than half as large as the whole of Australia. In Jutland there are vast stretches of what we would call sand hummocks and heath country, upon which nothing grows readily. The climate is raw and inhospitable, and though tempered somewhat by its nearness to the sea, is made bleak and cold from the North Sea winds and its contiguity to the icy Baltic. Their growing season is thus necessarily short, whilst we could grow at least two fodder crops in the year, as is even done in colder New Zealand, and in some parts of New South Wales. The Dane has learned to think for himself, and he has thought himself away from the commercialist and middleman, and does the work for himself through his own organisation. Take the question of eggs. He has learned that selling stale eggs is unprofitable, not because he did not get paid for them, or had to take a lower price, but because he was fined 5s. 6d. for every bad egg that he took to the depot of his co-operative organisation. This 5s. 6d.

fine made him a good member of his co-operative society, for he took good care that there should be no bad eggs from his farm. He did this by penning his hens so that every egg could be found, and there were no stolen nests. Moreover, he disposed of all his roosters when they were in the adolescent stage, except those required for breeding purposes. His supply of eggs being infertile made them more valuable, and again, he did not have to feed a lot of non-laying birds. The evidence supporting the increased value of infertile eggs is in our own local markets, for we find them quoted every week in the market reports at about 4d. per dozen above fresh eggs, and about 6d. above storekeepers' lots. We know that storekeepers do not produce eggs in any quantity, but collect from all and sundry, who procure their supplies under all sorts of conditions, and stolen nests, and even forsaken nest supplies are included in the storekeepers' collections. The Dane, having organised on the simpler and more general products, found he was not getting a fair deal with his pigs, so he organised co-operative bacon factories, and now the greater part of his pigs goes through his own bacon factory. Neither bacon curing, egg, butter, nor cheese production are secret formulas. Then, finding he was not getting a fair deal in the markets of Great Britain, the Dane established his own warehouse there, and sold his products to the distributors, and many of his customers are the workingmen co-operative societies of England and Scotland. And in parts of Denmark, where they did not have their own factories, the British co-operative societies established them, and giving fair treatment the Danes supplied them. Had they not done so the farmers would have at once set about establishing their own, as they did in other parts. So remarkable has this Danish production become that this small country, less than one-fifth the size of Victoria, exported in 1921 bacon to the value of £16,660,618, butter to the value of £15,084,605, and eggs to the value of £5,455,673. Every rural producer of this and other States can learn much from the organised features of Denmark. The slight attempt to organise local egg producers has increased the local value of eggs against Adelaide prices by about 1½d. per dozen, and if the organisation were perfected there is no reason why the increase should not be doubled. At present local eggs take a rail journey, first to Adelaide, then back again over a great portion of the same line to Sydney, because Sydney is at present the absorber of our glut product in this line. Speaking of the Danes, Mr. Tate says in the pamphlet, "They learn that country life can have a refinement and a culture of its own, and that greater interest in 'the things that are more excellent' will not only add to the happiness and contentment of individuals, but may even react upon the material concerns of life. Moreover, real living is just as practical a matter as earning a livelihood—a fact which some successful earners sometimes forget. They can learn, too, the lesson that unselfish team work for the advancement of the local community or the nation is a greater begetter of happiness, and that willing and loyal co-operation blesses not only him that receives, but him that gives. And they can learn that by developed intelligence, and the readiness to adopt the advice of trained scientific men in their midst, they may with equal or less labor produce much more abundantly to their own and the nation's benefit. The present tendency of the Australian is to look upon his co-operative society as only another form of middleman which is going to give the highest price for his products irrespective of whether it accords with the market of the finished product after it has passed through the manager's hands. Members of co-operative societies ought to, and must learn to take something less than the market price and get their share of the surplus when the product is disposed of and all risks covered to its final disposal. If this were so, we would hear nothing of insolvent co-operative societies and harrassed boards of directors who resign, because they are blamed for not running the business successfully after they have overpaid the producers—members of the society—more than they ought to have done, and then these disgruntled ones growl because the price has to be brought below parity to make up the losses through over payment of the previous season, whereas, if the spirit of true co-operation were manifest in them, when a deficiency was shown, they would straightway agree at their first business meeting to repay the over payment and so show to the world that they are true co-operators. One of the educational authorities in Denmark said that the main-spring of their success was their policy of pulling together, "all for each and each for all." "Our advance," he goes on, "is a movement of the people, the

leaders being found in all ranks, from the largest proprietor to the smallest crofter. All ranks and classes feel interested in the success and commercial supremacy of their products. Further, the Danes have shown a ready adaptability to circumstances; they did not cling to ancient, but with commendable zeal and unremitting industry, they resolutely address themselves to changing conditions, and with alacrity adapt themselves to any innovations which their teachers of science or Government experts may advise as calculated to ensure efficiency." Hence the prosperous and proud position attained by rural Denmark.

KALANGADOO WOMEN'S, November 8th.—The Hon. Secretary (Mrs. M. Evans) read a paper, "The Dairying Industry in New Zealand." It was decided to hold an "Egg Day," the proceeds of which would be presented to the Mount Gambier Hospital.

KALANGADOO, November 8th.—Several members of the Branch, in company with the Assistant Manager of the Kybybolite Farm (Mr. E. S. Alcock), made a trip to the Koorine Estate, and under the guidance of Mr. Dean inspected the fodder experimental plots being conducted on the estate. The crops of barley, dun peas, oats, subterranean clover, rape, and kale showed excellent growth, and the sheep grazing on the plots were in excellent condition.

KONGORONG, November 10th.—The Hon. Secretary (Mr. E. E. Morriss) read a paper, "Some Aspects of Power Farming," and an instructive discussion followed.

MOOROOK, November 13th.—Mr. Stoneman delivered an address, "Oil Sprays," to a gathering of 12 members and visitors. At the conclusion of the address numerous questions were asked and answered.

TATIARA, December 12th.—The Chairman (Mr. A. E. Milne) read the report tabled by the judge of the Tatiara Fallow and Crop Growing Competition. Messrs. H. Fisher and R. Wiese referred to the instructive lessons that had been learned during "Farmers' Day" at the Kybybolite Experimental Farm.

Two a Month

That is the rate at which new Branches of the Agricultural Bureau are being formed in South Australia at the present time. Is there a Branch

In Your District?

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OF THE

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All communications to be addressed:
"The Editor, Journal of Agriculture, Victoria Square, Adelaide."

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T. BUTTERFIELD,
Minister of Agriculture.

POINTS FOR PRODUCERS.

Experimental Blocks at Yurgo.

The experimental plots being conducted on the farm of Mr. H. Sanders, of Yurgo, near Karoonda, have this year yielded some unusually heavy returns, up to 41bush. 1lb. per acre having been secured. Mr. Sanders, who is carrying out these tests in conjunction with the Department of Agriculture, has under observation variety, manurial, and rotation plots. In the variety test, the eight varieties grown last year yielded as follows:—

	Bush. Lbs.		
Caliph	41	1	per acre
Marshall's No. 3	37	41	" "
Walker's Wonder	35	33	" "
Currawa	34	38	" "
Ford	34	16	" "
Felix	34	0	" "
Sultan	33	59	" "
Canaan	33	51	" "

The rotation test is designed with the object of demonstrating the contention of the Department of Agriculture that this particular district is more suited to mixed farming operations than to continuous wheat cropping. The rotation adopted is bare fallow-wheat-lucerne-lucerne-lucerne. The plot of this rotation which is sown to wheat (Marshall's No. 3) is divided into six sub-plots for the purpose of testing different manurial dressings. The manurial treatment which each sub-plot received and the yield per acre are set out in the following table:—

Plot No.	Manurial Treatment.	Yield per Acre.	
		Bush. Lbs.	
1 (check plot)	No manure	15	40
2	1cwt. super	32	2
3	$\frac{1}{2}$ cwt. super 5cwts. lime .	28	51
4	1cwt. super 5cwts. lime .	26	57
5	2cwts. super 5cwts. lime .	33	4
6	3cwts. super 5cwts. lime .	35	23

Tobacco Plants.

What is believed to be the largest area of tobacco yet planted on any individual holding in South Australia has just been put in by Messrs. Miller Bros., of Macclesfield. The work of transplanting has been carried out with the aid of a Beamis transplanting machine, with which two men and a boy were able to put in something like two acres per day. The greater part of the 15 acres has been planted to

Warne and Spotted Gum varieties, and a smaller portion to White Stem Orinoco and White Burley sorts. The seed was supplied by the Department of Agriculture.

Seed Testing.

Seed testing can now claim to be one of the exact applied sciences. The rule-of-thumb methods used by the nurserymen and seedsmen up to 15 years or so ago, though sufficient for their own purposes, were not strictly accurate, and varied greatly from firm to firm and from country to country. To-day, with official seed testing at least, the same methods are used all over the world, just as in chemical analysis, so that seeds tested before leaving England give practically the same results on arrival here, unless damaged on the voyage. The standard of purity required may vary in different countries, but not the results of a test, where it is done by properly qualified seed analysts. A general idea of the germinating value of a parcel of seed may be obtained on the farm by the following simple procedure:—Obtain a large soup plate and a small saucer. Take a strip of blotting paper about 2in. wide and, say, 8in. long, and place it across the bottom of the saucer, turning both the ends over the edge. Then put the saucer in the soup plate, bottom upwards, and pour in water till the saucer is nearly covered. Take a piece of blotting paper the size of the plate, and put in position, just resting on the saucer. On this arrange the seeds. Cover them with another piece of blotting paper, and put them in a cupboard away from draughts. The water should be replenished if it dries up. Perfectly clean old flannel or calico will do instead of blotting paper.

But for more accurate results much more elaborate apparatus is necessary; for instance, a germinator kept at an even temperature. The Department of Agriculture has a seed-testing plant in almost constant use. In this, something over 1,000 samples are dealt with every year. The Department will test seeds for producers free of charge.

Farmers and gardeners may send in any seed which they suspect or which has failed to germinate. Farmers sow a large quantity of one kind of seed, and if it does not happen to be good the loss is great. The Department frequently has samples of seed wheat sent in after a failure, with the request that the cause should be ascertained, but it would be much better if farmers would send in samples before sowing. It would not be much trouble and may save a great loss. Some grain may be all right if pickled with formalin, but not with bluestone. In some the germ may be damaged by insects in such a way that it cannot be detected except under the microscope, or it may contain some noxious weed seed. The presence of any of these defects can be ascertained by having a sample tested. The information can be had in from one to two weeks, according to the time involved in forward and back postage. Samples and correspondence on this subject should be directed to the Horticultural Branch of the Department of Agriculture, Exhibition Buildings, North Terrace, Adelaide.

Barley.

The Department of Agriculture received at the end of January advice from London to the effect that the barley market was dull, with no change on previous advice of prices, which were for Australian barley £3 11s. 6d., shipment per steamer during December-January. The price quoted is equivalent to 7s. 11½d. per bushel, c.i.f. London.

Bacteriology.

Under the title "Practical Bacteriology, an Introductory Course for Students of Agriculture," a book "intended to serve as a guide to the chief methods employed in general and agricultural bacteriology," has been written by Andrew Cunningham, B.Sc. (Agric.), and issued by Messrs. Oliver & Boyd, Tweedvale Court, Edinburgh. The published price is 7s. 6d. net.

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INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

[Replies furnished by Mr. R. H. F. MACINDOE, L.V.Sc., M.R.C.V.S., Deputy Chief Veterinary Officer.]

"S. R. P.," South Lone Gum, has horse which scours when working.

Reply—Give the animal the following drench after starving overnight:—Raw linseed oil, 1 pint; oil of turpentine, 2oz. Shake well before administration. Attend to feeding by giving only good hay or chaff, lucerne, &c.

"G. E. H.," Sandalwood, has horse which goes down and is unable to rise without assistance.

Reply—The trouble may be due to toxæmic paralysis (forage poisoning), weakness through insufficient food, &c. Keep the animal in slings, and give plenty of good, nutritious food, such as chaff with boiled grain and oaten hay. In addition, obtain $\frac{1}{2}$ lb. of powdered nux vomica, and give one flat teaspoonful twice daily for a fortnight. The sores you mention are the result of lying on ground, and should be treated by washing daily with washing soda solution (a tablespoonful to $\frac{1}{2}$ gall. of warm water), and apply carbolic oil to keep flies away.

Hon. Secretary, Shoal Bay Agricultural Bureau, reports bay filly with staked wound affecting chest and shoulder.

Reply—Keep the wound clean by washing outside with soap and warm water, and inject into the opening with a syringe a solution of Condy's crystals (a light violet color). Do this every day. If flies are troublesome, put in a small plug of cotton wool, and smear surrounding parts with carbolic oil every day. Do not worry about the piece of white tissue or sinew projecting from the wound, but be sure and see that the wound can drain, *i.e.*; if there is a pocket, open with a sharp knife at the lowest point. The dragging of the foot is probably the result of pain and swelling, and not due to injury to a nerve.

Hon. Secretary, Blackheath Agricultural Bureau, Rockleigh, asks if English dandelion is likely to have any injurious effect on horses if eaten when the plant is in flower.

Reply—No, the plant is a weed, but no injurious effects have ever been recorded as result of horses or any stock eating it.

[Replies furnished by Mr. ALAN H. ROBIN, B.V.Sc., Government Veterinary Officer].

"W. A. T.," Cummins, has aged mare with "weeping" eye, and also filly with film over eye.

Reply—If possible, keep the animals in a shady place where their eyes will not be exposed to bright sunlight. Bathe the eyes affected several times a day with a warm, saturated solution of boracic acid in water. Then four or five times a day place a few drops of the following lotion into the eyes:—Zinc sulphate, 32 grains; boracic acid, 16 grains; distilled water 4oz. Put it in at blood heat with a small eye syringe or clean fountain pen dropper, and hold the eyelids closed for a minute after, so that the fluid injected will run all over the front of the eyeball.

"L. R. C.," Pata, has aged draught mare, off feed, and the jaws and throat are swollen hard.

Reply—Apply frequent hot fomentations to the swollen gland until it softens, when it can be lanced with a sharp, clean pocket knife at the spot where it feels softest. After the pus is evacuated, syringe abscess cavity daily with a weak lysol solution, keeping the wound open so long as there is any discharge forming. Feed the horse on sloppy feed, or green feed if available. Water from a bucket, and dissolve one or two ounces of ordinary photographer's hypo in the water daily.

"A. I. D.," Frankton, reports death of horse. During the past season horse worked constantly in harvester. When unharnessed, did not eat, head hanging low, and front legs spread wide apart. Animal then laid down, groaned and breathed rapidly, eyes bright and inflamed, swelling on knees, and heart beating rapidly. Inquirer also asks for list of useful drugs to keep on hand.

Reply—It would appear that the animal died from congestion of the lungs. If taken in hand early, suitable treatment would have been to take away ½ gall. of blood by bleeding from the jugular vein. Then the animal should have had a mustard plaster applied to the sides of the chest, and diffusible stimulants, such as a quart of warm ale or 4oz. whisky or brandy in water as a drench and repeated at frequent intervals as necessary according to the progress made. The following drugs would be useful to keep on hand for first aid treatment of stock ailments:—*Epsom Salts*—1lb. dissolved in water with 2oz. ginger forms a purgative drench for horses and cattle—2oz. or 3oz. for sheep—1oz. night and morning in damped feed as a laxative for horses and cattle. *Raw Linseed Oil*—1 pint to 1½ pints as a laxative drench for horses and cattle. *Turpentine*—2oz. in raw linseed oil is useful as a colic drench for horses. Also useful in bloat in cattle and sheep. *Powdered Nux Vomica*—1 to 1½ teaspoonfuls two or three times a day is a useful tonic for horses and cattle. *Fowler's Solution of Arsenic*—1 tablespoonful night and morning for a fortnight in the feed or drinking water is a useful tonic for horses and cattle, and is valuable for red worms in horses. *Powdered Gentian Root*—4 teaspoonfuls mixed with 1 teaspoonful of powdered nux vomica is very useful for both horses and cattle when off feed. Give three times a day, mixed in a little treacle or honey to make a sticky paste, and smear on back of tongue and teeth. *Bluestone (Copper Sulphate)*—A valuable medicine for stomach worms in sheep, given in 1 per cent. solution. Dose, 3 fluid ounces for sheep over one year, 1½oz. for hoggets. Also useful for treatment of proud flesh in wounds. *Tincture Iodine*—A useful antiseptic for wounds. *Cresol*—A useful disinfectant.

"T. E. D. F.," Kingscote, reports death of cow. *Post-mortem* examination showed the large pouch full of food. The small bowel was full of blood and water. Symptoms:—Dragging feet, slobbering and lying down with the head moving from one side to the other. Other cows are showing same symptoms of trouble.

Reply—The cows are suffering from what is commonly termed "impaction paralysis," the term being coined from the chief symptoms which are usually noticed in this condition. It is primarily induced by a deficiency of phosphate and lime in the feed ration arising out of soil poverty of these two chemicals. As a rule curative treatment of such cases is of little avail, for when the cows show marked symptoms of the affection they are too far gone to respond satisfactorily to treatment. A good purgative of 16oz. Epsom salts, ½lb. treacle or molasses, 2oz. ginger given in 1½ pints warm water is the first thing to be done. A free supply of drinking water should be made available, and the cow given any available skim milk to drink, also two teaspoonfuls of powdered nux vomica three times daily. Preventive treatment is better than cure, and stock can practically be kept free from the trouble if given three or four tablespoonfuls daily of ground sweet bonemeal (or even superphosphate) in the feed, also 1oz. to 2oz. common salt, and grazing supplemented by feeding some good quality crushed oats, chaff, and bran. Pasture land should be liberally top dressed with super.

"W. Bros.," Yeelanna, report horse with a large growth on bottom eyelid.

Reply—This case requires an operation. With care, you would, no doubt, be able to carry out fairly satisfactory treatment of the horse. All you would

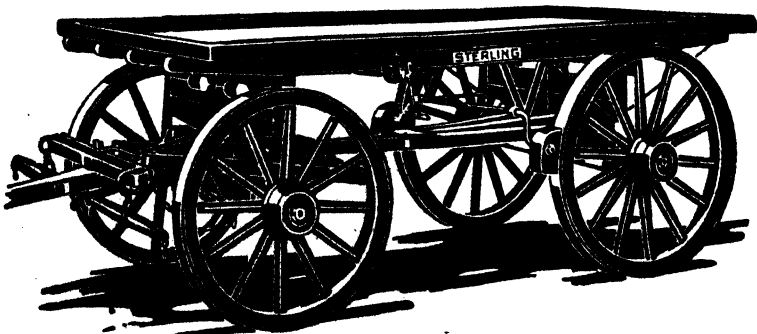
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require would be a little cocaine, a needle and stout thread, a sharp pair of scissors, and a good twitch. Bathe the eye, and clean it up with a little warm boracic lotion. Put a few drops of cocaine solution (1 per cent. or 2 per cent.) in the eye, and wait for a few minutes for the anaesthetic effect to operate. Then put on a twitch, by which the head of the horse can be held steady. Thread the needle with a clean piece of stout thread, and pass it through the centre of the growth, from the inside to the outside, so that the point of the needle is not directed to the eyeball, thus minimising chances of injury if the animal moves his head. The needle can then be taken off the thread, which, by holding on to both ends and exerting gentle traction, will pull the growth out from the eye. It can then, while pulling on the thread, be cut off at the base with a pair of sharp scissors. Subsequently, for a day or two, bathe the eye with lukewarm boracic lotion.

"H. C. P.," Honiton, has bay gelding with swollen sheath, which discharges a wax-like fluid.

Reply—A dirty sheath is at the bottom of the trouble. Clean the part up of all dressings previously applied as much as possible with warm water, soap, and a little lysol. The penis must be grasped by the hand introduced into the sheath, and pulled right out so that the whole of it and the inside of the sheath may be cleansed of the waxy material that has been collected there. Warm, soapy water, followed by just plain warm water will effect this satisfactorily. After thoroughly cleansing the parts this way, a very light smearing of vaseline may be given to the penis and inside of sheath before allowing the penis to be returned into the sheath. Maintain cleanliness of the parts by periodical washing as indicated, and the trouble should clear up. To help, put the animal on sloppy feed, and give a handful of Epsom salts mixed in it night and morning for a week. A dusting powder of equal parts of boracic acid and bleaching powder applied to the belly round opening of sheath will help to keep flies away.

"L. Bros.," Owen, report number of sheep partially blind. The eyes have a "pinkish" colored appearance.

Reply—The sheep are affected with an infectious ophthalmia, and all affected ones should immediately and rigorously be isolated from the healthy ones. If possible, the person attending the affected ones for dressing should not handle the sound ones. A few drops of the following lotion should be used three or four times daily on affected sheep, dropping it into the eyes:—Zinc sulph., 30 grains; boracic acid, 30 grains; distilled or boiled water, 8 fluid ounces. Affected sheep should not be returned to the flock for three weeks after recovery to ensure safety from a relapse which sometimes occurs.

"A. H. P.," Renmark, has nine-year-old gelding in first-class condition when brought in from paddock. After few days work lost condition, and is very sluggish. Is always ravenous for food, and eats dung and rubbish. Is also passing sand. Horse has been fed on lucerne.

Reply—Lucerne should be quite satisfactory to feed the animal on, in conjunction with good quality chaff and bran. Feed this latter damped, and give a handful of Epsom salts in it night and morning for a week. Supply rock salt in manger. Try some of the following powders, one to be given night and morning immediately after feeding, each containing:—Powdered ferri sulph., 1 dram; powdered nux vomica, 1 dram; powdered gentian root, 2 drams. Mix it in a spoonful of treacle to make a stiff, sticky paste, and smear it on back teeth and tongue with a piece of flat, smooth stick.

"H. F. H.," Ki Ki, has heifer due to calve in six weeks' time, a calf has been sucking the heifer, and her udder is now distended with milk. Should the udder be relieved?

Reply—If the udder stocks up with milk it would be advisable to milk the heifer once a day to relieve the condition, otherwise there is a risk of mammitis resulting from overstocking.

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FIRST ANNUAL WHEAT CROP COMPETITION OF THE COUNTY OF CHANDOS IN SOUTH AUSTRALIA, 1924.

[Judged by W. J. SPAFFORD, Chief Agricultural Instructor.]

The County of Chandos contains much land that is now being utilised for cereal growing, and as the climatic conditions prevailing over all portions of that area of country do not vary very much, the county boundaries enclose a district very suitable for conducting a wheat crop competition. In such a large extent of country there are naturally some variations in the soil types, but even here, as well as with the climate, the district is much better off than would be most other districts of similar area in this State. On one extreme the soil consists of a heavy loam of fair fertility, although rather raw when first brought under cultivation, and on the other a poor sand; but the great bulk of the cereal-growing land is a medium loam of fair fertility, and is found in most parts of the district in valleys between more or less parallel sand ridges. When this district is being farmed as it should be, viz., the loams growing cereals and carrying some livestock, and the sands carrying livestock and only occasionally growing a cereal crop, there will be no difficulty experienced in conducting wheat-growing competitions, because all competitors will then be on a nearly equal footing. The judging of

the 64 crops submitted (including one in the Pinnaroo local competition) was done between November 25th and December 3rd, 1924, to the following scale of points:—

Apparent yield	60
Trueness to type	10
Freedom from disease	10
Freedom from weeds	15
Evenness of crop	5

The table following sets out in detail the points allotted to each crop and the position in the competition in which each exhibit was placed.

COUNTY OF CHANDOS WHEAT CROP COMPETITION, 1924.

Competitor's Name.	Address.	Position.	Variety.	Results of Judging.					
				Ap- parent Yield.	True- ness to Type.	Free- dom from Disease.	Free- dom from Weeds.	Even- ness of Crop.	Total.
				60	10	10	15	5	100
Koch, C. E.	Lameroo	1	Ford	51	8.5	9.5	14.5	4.5	88
Fewings, H. G.	Pinnaroo	2	Ford	51	8.5	9	13.5	4.5	86.5
Koch, A. J. A.	Lameroo	3	Major	51	0	8.5	13	4	85.5
Hunt, F. N.	Pinnaroo	4	Late Gluyas	48	9	9.5	14	4.5	85
Taylor, N. A.	Lameroo	= 5	{ Currawa Gluyas Ford }	46	8	9.5	13	4	80.5
Papps, J.	Lameroo	= 5	Gluyas	46.5	8.5	6.5	14.5	4.5	80.5
Hunt, F. N.	Pinnaroo	7	Gluyas	42.5	9	9.5	12.5	4.5	78
Whittle, H. C.	Pinnaroo	8	Gluyas	41	9.5	9.5	13.5	4	77.5
Kelly, M.	Pinnaroo	9	{ Gluyas Ford }	41	9.5	9.5	12.5	4.5	77
Schumacher, C. O.	Parilla	10	Ford	40.5	8.5	9.5	14	4	76.5
Fewings, H. G.	Pinnaroo	11	{ Gluyas Currawa }	40.5	9.5	9.5	12	4.5	76
Badman, A. P.	Pinnaroo	=12	King's Surprise	40	9	9.5	12	4	74.5
O'Loughlin, C. V.	Pinnaroo	=12	Walker's Wonder	41	8.5	8.5	12.5	4	74.5
Johnston, J. E.	Pinnaroo	=14	{ Gluyas Queen Fan }	38.5	9	8.5	14	4	74
Koch, F. R.	Wilkawatt	=14	Gluyas	39.5	8.5	9.5	12.5	4	74
Fisher, A.	Pinnaroo	=16	Faun	44	9.5	5	11.5	3.5	73.5
Edwards, Roy	Pinnaroo	=16	Ford	40.5	8.5	9	11.5	4	73.5
Pink, D.	Lameroo	=18	Currawa	38.5	9	8.5	13	4	73
Blake, H. J.	Lameroo	=18	{ Gluyas Canberra Dollor }	40.5	9.5	5	13.5	4.5	73
Edwards, P. J.	Pinnaroo	20	Ford	39.5	8.5	9.5	11.5	3.5	72.5
Koch, F. R.	Wilkawatt	=21	Currawa	39	9	9	11.5	3.5	72
McKenzie, J. R.	Pinnaroo	=21	Gluyas	40.5	9.5	6	12	4	72
Goldsworthy, K.	Parilla	=21	Ford	39.5	7.5	9.5	11.5	4	72
Nelndorf, C. W.	Parilla	24	{ Kerley's Early Gluyas }	43.5	7	5	11.5	4.5	71.5
Arnold, W.	Parilla	25	Ford	37.5	8.5	8.5	12.5	4	71
Slater, E.	Pinnaroo	26	Early Baart	37.5	7.5	9	12.5	4	70.5
Hawthorne, A. F.	Pinnaroo	=27	Gluyas	35	9	9	13	4	70
Klein, A.	Pinnaroo	=27	{ Faun Joppa }	36.5	9.5	7	13.5	3.5	70
Young, A. F.	Pinnaroo	=29	{ Ford Daphne Calph }	37.5	8	9	11.5	3.5	69.5

COUNTY OF CHANDOS WHEAT CROP COMPETITION—continued.

Results of Judging.

Competitor's Name.	Address.	Position.	Variety.	Apparent Yield. 60	Trueness to Type. 10	Freedom from Disease. 10	Freedom from Weeds. 15	Evenness of Crop. 5	Total. 100
McCormack, V. & G.	Parilla	=29	Gluyas	37.5	6.5	9.5	12	4	69.5
Koch, J. L.	Lameroo	=31	Gluyas	35.5	8	9.5	12.5	3.5	69
Hentschke, C. H. E.	Lameroo	=31	Ford	36	8	9.5	12.5	3	69
Hamilton, J. A.	Lameroo	=31	{ Daphne	36	8.5	9	12.5	3	69
			{ Currawa						
Koch, R. B.	Lameroo	=34	Yandilla King ..	34.5	9.5	9.5	12	3	68.5
Young, A. F.	Pinnaroo	=34	Late Gluyas	35	9.5	9	11.5	3.5	68.5
Davis, W. B. & Sons	Pinnaroo	=34	Dan	35.5	8	9	12.5	3.5	68.5
Pierson, F.	Pinnaroo	*	Gluyas	36	8	9	11.5	4	68.5
Koch, R. B.	Lameroo	=37	Currawa	33	9.5	9.5	12.5	3.5	68
Schiller, C. A. E.	Pinnaroo	=37	Queen Fan	34.5	9.5	8.5	12	3.5	68
Foale & Sons	Parilla	=37	Queen Fan	36	9	7	12	4	68
Bonnin, F. G.	Pinnaroo	40	Gluyas	36	8.5	7	12	3.5	67
Trowbridge, E. J.	Lameroo	=41	Minister	33.5	8	9	12.5	3.5	66.5
Rice, P. M.	Pinnaroo	=41	{ Federation	31.5	9	9	13	4	66.5
			{ Currawa						
Lang, F. D.	Parilla	=43	Currawa	33	8.5	8.5	13.5	2.5	66
Phillips, C. H.	Parilla	=43	Kerley's Early ..	33	7.5	9	12.5	4	66
Entwistle, J. H.	Parilla	45	Kerley's Early ..	32.5	8	7.5	13.5	4	65.5
Jones, P. H. & F. S.	Pinnaroo	46	{ Major	33.5	7.5	8.5	12	3	64.5
			{ Yandilla King ..						
Billing, R. J.	Pinnaroo	47	Ford	31.5	8.5	9	11.5	3.5	64
Jacob, W. S.	Parilla	=48	{ Yandilla King ..	30.5	7.5	9	13	3.5	63.5
			{ Kerley's Early ..						
			{ Currawa						
Gregory, G. E.	Parilla	=48	{ Yandilla King ..	33	7	8	12	3.5	63.5
			{ Golden Return ..						
McKenzie, R. L.	Pinnaroo	=48	Ford	35.5	5	8.5	11	3.5	63.5
Gray, John	Parilla	51	Turvey	32	7.5	8	12	3.5	63
Venning, S. J.	Pinnaroo	52	{ Early Baart	31.5	8	7.5	12	3.5	62.5
			{ Western Wonder ..						
			{ Queen Fan						
Leak E. H. & Sons	Pinnaroo	53	Major	31.5	9	7	12	2.5	62
Tiller, G.	Pinnaroo	54	{ Ford	30.5	9	7	12.5	2.5	61.5
			{ King's White ..						
Ledger, H.	Pinnaroo	55	Gluyas	31.5	7.5	7	11.5	3.5	61
Venning, S. J.	Pinnaroo	=56	Currawa	28	9	7.5	12.5	3.5	60.5
Twelftree, G. H.	Lameroo	=58	{ Currawa	29	8.5	8.5	12	2.5	60.5
			{ Daphne						
			{ J7						
Hancock, C. J.	Parilla	58	Late Gluyas	30	6.5	9	11	3	59.5
Burns, A. G.	Lameroo	50	{ Gluyas	33	—	9.5	12	4	58.5
			{ Daphne						
			{ Currawa						
Camens, A.	Pinnaroo	=60	{ Yandilla King ..	27	8.5	8.5	11.5	2.5	58
			{ Queen Fan						
Shannon, L. A.	Parilla	=60	{ Ford	29.5	7	7.5	11.5	2.5	58
			{ Kerley's Early ..						
Davis, W. B. & Sons	Pinnaroo	=62	{ Caliph	18.6	9	6	12	3.5	49
			{ Dan						
Colwill Bros.	Parilla	=62	Kerley's Early ..	19.5	7.5	7.5	11.5	3	49

* Pinnaroo local competition only.

The treatment given to each crop as to seed, manure, and soil preparation, and the previous five years' history of the land on which the crop was grown, is set out in the next table:—

COUNTY OF CHANDOS WHEAT CROP COMPETITION, 1924—*continue*

Name.	Address.	Position.	History of the Land.					Seed per Acre.	Superphosphate per Acre.	Date Sown.
			1919.	1920.	1921.	1922.	1923.			
Koch, C. E.	Lameroo	1	Grass	Fallow	Wheat	Oats	Fallow	lbs. 65	lbs. 100 (45%)	June 12
Fewings, H. G.	Pinnaroo	2	Fallow	Wheat	Oats	Oats	Fallow	55	130 (45%)	June 12
Koch, A. J. A.	Lameroo	3	Oats	Fallow	Wheat	Barley	Fallow	75	120 (45%)	June 24
Hunt, F. N.	Pinnaroo	4	—	Grass	Wheat	Grass	Fallow	60	80 (46%)	May 29
Taylor, N. A.	Lameroo	= 5	—	Grass	Fallow	Wheat	Fallow	70	96 (45%)	June 13
Papps, J.	Lameroo	= 5	Wheat	Grass	Grass	Grass	Fallow	70	180 (45%)	June 27
Hunt, F. N.	Pinnaroo	7	—	Grass	Wheat	Grass	Fallow	60	80 (45%)	June 7
Whittle, H. C.	Pinnaroo	8	Wheat	Grass	Fallow	Wheat	Fallow	75	112 (45%)	June 12
Kelly, M.	Pinnaroo	9	Grass	Fallow	Wheat	Oats	Fallow	80	120 (46%)	May 7
Schumacher, C. O.	Parilla	10	Grass	Fallow	Wheat	Grass	Fallow	70	90 (45%)	May 16
Fewings, H. G.	Pinnaroo	11	Fallow	Wheat	Oats	Oats	Fallow	60	112 (45%)	June 12
Badman, A. P.	Pinnaroo	= 12	—	—	Fallow	Oats	Fallow	60	90 (45%)	June 5
O'Loughlin, C. V.	Pinnaroo	= 12	Oats	Grass	Grass	Grass	Fallow	70	90 (45%)	June 5
Johnston, J. E.	Pinnaroo	= 14	Grass	Grass	Grass	Grass	Fallow	60	90 (45%)	June 7
Koch, F. R.	Wilkwatt	= 14	Grass	Grass	Wheat	Oats	Fallow	60	142 (46%)	May 30
Fischer, A.	Pinnaroo	= 16	—	—	Oats	Grass	Fallow	60	100 (36%)	June 14
Edwards, Roy	Pinnaroo	= 16	Wheat	Grass	Oats	Grass	Fallow	70	95 (46%)	May 15
Pink, D.	Lameroo	= 18	Oats	Grass	Oats	Grass	Fallow	60	90 (45%)	May 15
Blake, H. J.	Lameroo	= 18	Wheat	Oats	Oats	Grass	Fallow	60	93 (1.1 G.E.)	June 16
Edwards, P. J.	Pinnaroo	= 20	—	Grass	Grass	Grass	Fallow	60	112 (46%)	May 16
McKenzie, J. R.	Pinnaroo	= 21	—	Grass	Wheat	Grass	Fallow	80	90 (45%)	May 31
Koch, F. R.	Wilkwatt	= 21	Grass	Grass	Wheat	Oats	Fallow	60	142 (46%)	June 6
Goldsworthy, K.	Parilla	= 21	Fallow	Wheat	Oats	Grass	Fallow	70	112 (36%)	June 6
Neindorf, C. W.	Parilla	= 24	Fallow	Wheat	Grass	Grass	Fallow	80	112	June 18
Arnold, W.	Parilla	= 25	Oats	Fallow	Wheat	Oats	Fallow	60	130 (36%)	May 30
Slater, E.	Pinnaroo	= 26	Fallow	Oats	Grass	Grass	Fallow	60	100 (45%)	April 30
Hawthorne, A. T.	Pinnaroo	= 27	—	—	—	—	Fallow	70	90 (45%)	May 14
Klein, A.	Pinnaroo	= 27	—	—	—	—	Fallow	56	98 (46%)	June 14
Young, A. F.	Pinnaroo	= 29	Fallow	Wheat	Oats	Grass	Fallow	65	90 (45%)	June 7
McCormack, V. & G.	Parilla	= 29	Fallow	Wheat	Wheat	Grass	Fallow	70	100 (36%)	June 13
Koch, J. L.	Lameroo	= 31	Fallow	Wheat	Oats	Wheat	Fallow	85	120 (45%)	June 28
Hentschke, C. H. E.	Lameroo	= 31	Fallow	Wheat	Oats	Grass	Fallow	60	112 (46%)	June 30
Hamilton, J. A.	Lameroo	= 31	Grass	Grass	Wheat	Grass	Fallow	58	93 (45%)	May 23
Koch, R. B.	Lameroo	= 34	Grass	Fallow	Oats	Grass	Fallow	55	100 (45%)	May 27
Young, A. F.	Pinnaroo	= 34	Fallow	Wheat	Oats	Grass	Fallow	80	90 (46%)	June 14
Davis, W. B. & Sons	Pinnaroo	= 34	Grass	Grass	Grass	Grass	Fallow	75	112 (46%)	May 14
Pierson, F.	Pinnaroo	*	Oats	Wheat	Wheat	Oats	Fallow	90	150 (45%)	June 7
Koch, R. B.	Lameroo	= 37	Wheat	Oats	Fallow	Wheat	Fallow	60	112 (45%)	June 2
Schiller, C. A. E.	Pinnaroo	= 37	Wheat	Oats	Grass	Grass	Fallow	60	84 (46%)	June 14
Foale & Sons	Parilla	= 37	Rape	Wheat	Oats	Grass	Fallow	60	112 (45%)	June 23
Bonnin, F. G.	Pinnaroo	= 40	Oats	Fallow	Wheat	Oats	Fallow	80	82 (46%)	June 14
Trowbridge, E. J.	Lameroo	= 41	Grass	Fallow	Wheat	Grass	Fallow	65	97 (45%)	June 14
Rice, P. M.	Pinnaroo	= 41	—	—	—	—	Fallow	90	100 (45%)	May 14
Lang, F. D.	Parilla	= 43	—	Wheat	Oats	Grass	Fallow	60	90 (46%)	May 26
Phillips, C. H.	Parilla	= 43	Fallow	Wheat	Grass	Oats	Fallow	70	90 (45%)	May 28
Entwistle, J. N.	Parilla	= 45	—	Fallow	Wheat	Grass	Fallow	60	90 (45%)	June 15
Jones, P. H. & F. S.	Pinnaroo	= 46	—	Grass	Fallow	Wheat	Fallow	70	84 (46%)	May 14
Billing, R. J.	Pinnaroo	= 47	—	—	—	—	Fallow	60	90	June 14
Jacob, W. S.	Parilla	= 48	—	Wheat	Oats	Grass	Fallow	60	90 (36%)	June 16
Gregory, G. E.	Parilla	= 48	—	Fallow	Wheat	Grass	Fallow	50	80 (36%)	May 18
McKenzie, R. L.	Pinnaroo	= 48	—	Grass	Oats	Grass	Fallow	80	112 (36%)	May 14
Gray, John	Parilla	= 51	Grass	Grass	Wheat	Grass	Fallow	65	90 (45%)	June 18
Vennings, S. J.	Pinnaroo	= 52	Fallow	Wheat	Grass	Grass	Fallow	55	80 (36%)	May 14
Leak, E. H. & Sons	Pinnaroo	= 53	Fallow	Wheat	Oats	Wheat	Fallow	60	93 (46%)	June 4
Tiller, G.	Pinnaroo	= 54	—	—	—	—	Fallow	70	80 (46%)	June 25
Ledger, H.	Pinnaroo	= 55	—	Wheat	Oats	Grass	Oats	70	100 (36%)	July 5
Vennings, S. J.	Pinnaroo	= 56	Grass	Oats	Grass	Grass	Fallow	55	80 (36%)	May 14
Twelftree, G. H.	Lameroo	= 56	Oats	Fallow	Wheat	Oats	Fallow	65	140 (45%)	May 27
Hancock, C. J.	Parilla	= 58	—	Fallow	Wheat	Grazing	Fallow	60	60 (45%)	June 14
Burns, A. G.	Lameroo	= 59	Wheat	Grass	Fallow	Wheat	Fallow	60	112 (45%)	June 14
Camens, A.	Pinnaroo	= 60	Wheat	Oats	Grass	Grass	Fallow	60	75 (45%)	May 20
Shannon, L. A.	Parilla	= 60	—	Wheat	Oats	Oats	Fallow	60	—	—
Davis, W. B. & Co.	Pinnaroo	= 62	—	—	—	—	Fallow	75	93 (46%)	May 14
Colwill Bros.	Parilla	= 62	—	Grass	Oats	Grass	Fallow	60	90 (45%)	June 25

* Pinnaroo Local Competition only.

THE COMPETING CROPS.

1. *Mr. C. E. Koch, Lameroo (Ford).*—This really excellent crop secured first place in the competition because of the high marks received for farming methods, as is evidenced by the fact that two other crops received the same number of points for "apparent yield," and the only really weak point in the crop was the presence of too many "strangers." It was almost disease free, showing only a few plants suffering from "hay-die," and a very light sprinkling of "red rust" spots. There was no barley in the crop, and on the whole it was very clean, only containing a few patches of charlock and soapwort, and odd plants of Cape weed, sea barley, oats, and poppy. The regularity and evenness of the crop were much above the average. The amount of seed (65lbs.) and superphosphate (100lbs. 45 per cent.) used per acre were not excessive, but for the variety and on clean land should be sufficient where good cultivation practices are followed. The total absence of patches of "take-all" shows that the disease can be controlled when proper methods are followed, because, judged by the number of crops more or less badly affected by the troubles which were seen in the district, the season rather favored the disease, and all credit for freedom from it, where this is attained, is due to the farmers themselves.

Mr. C. E. Koch's exhibit was an extremely good one, and showed every evidence of being almost wholly due to good agricultural practices, well carried out.

2. *Mr. H. G. Fewings, Pinnaroo (Ford).*—This crop of Ford wheat was considered to be as good a grain producer as that placed first in the competition, but it lost $1\frac{1}{2}$ points under other headings. It was only fairly true to type, containing a little of at least two other varieties. Besides a few spots of "red rust" and a light sprinkling of "hay-die" plants, there were a few small patches of "take-all." Although most of the crop was nice and clean, a lot of charlock was present in patches, with some poppy and isolated plants of oats, but there was no barley visible. Other than being a little thin in places, due to lack of seed or bad germination, it was a very even, regular crop. Had good seed true to type been used, and a little more of it applied per acre, this crop would have been hard to beat, for 55lbs. of seed per acre was barely enough to give a crop sufficiently thick to smother weeds. This was a well-grown crop, reflecting great credit on Mr. Fewings' properly conducted wheat-growing methods.

3. *Mr. A. J. A. Koch, Lameroo (Major).*—A few plants of a bearded wheat and a few of a brown-chaffed variety were to be seen in this very nice crop of Major. As well as a little "loose smut," "flag smut," "red rust," and "hay-die," there was an isolated plant or so of "bunt," but it was free from "take-all" patches. Both barley and drake were present, as well as some Wimmera rye grass and a little charlock, sea barley, sow thistle, and spear thistle. Parts of the crop carried tipped ears, but the growth made was fairly even. Much grain will be harvested from this crop, and Mr. Koch is to be congratulated on his entry.

4. *Mr. F. N. Hunt, Pinnaroo* (Late Gluyas).—Just a sprinkling of strangers (some bearded, some white-chaffed) was visible in this very nice crop of Late Gluyas, and it was almost disease-free, only showing spots of "red rust" and a few isolated "hay-die" plants. Very few weeds were present, still an isolated plant or so of barley was seen, with some charlock and poppy, and odd plants of wild lettuce and Cape weed, and a few variegated thistle, sow thistle, and cockspur at the west end. A little of this crop was leaning, and a few small patches had lodged, but it was a really even crop. This crop was a rather remarkable instance of the control of "take-all," for it was grown on land of a sandy nature, and very liable to attacks, and was quite free from patches of the disease, whereas an adjoining field, only separated by a fence which was no more than 2ft. in height in places owing to drift, had a crop very badly affected by the trouble. All the crops of wheat seen on this part of Mr. Hunt's farm show evidences of good work, and "take-all" is well controlled, showing that the man doing the job understands what is necessary.

—5. *Mr. N. A. Taylor, Lameroo* (Currawa 35 acres, Gluyas 10 acres, and Ford 5 acres).—The Gluyas was nearly true to type, but both Currawa and Ford contained a fair amount of other wheats. Currawa contained a little "loose smut," "red rust," and "flag smut," and some scattered "hay-die," whereas Gluyas and Ford were almost disease free, only showing a little "red rust," and odd plants affected with "hay-die." All three varieties were nice and clean except that Gluyas had a lot of barley and a little drake, Currawa a little barley, and Ford a fair amount of drake, and other than these there were also present oats, charlock, and poppy, and a little sow thistle and sheep weed. All blocks were nice and even.

—5. *Mr. J. Papps, Lameroo* (Gluyas).—Both King's Early and Bearded Gluyas were present as noticeable admixtures in this crop of Gluyas. Quite a fair amount of "bunt" was present, as well as a little "flag smut," "red rust," and "hay-die" plants, but there were no patches affected with "take-all." This very clean crop had no barley in it, and only a small quantity of charlock, oats, sea barley, and sow thistle. Although the crop in the hollows had lodged, most of it was standing well, and was fairly even. This crop of Mr. Papps demonstrates very clearly that heavy dressings of superphosphate do not "blight" wheat crops, at all events in the Lameroo district. Not one of the 63 crops inspected in this competition was wholly free from "blighted" plants, yet this crop of Gluyas, which was dressed with 180lbs. of 45 per cent. superphosphate to the acre, showed less of this trouble than the great majority of the other crops.

7. *Mr. F. N. Hunt, Pinnaroo* (Gluyas).—Although this block of wheat contained a little of at least three other varieties, still it was very fair as regards purity. With the little "red rust" and "flag smut" there were a few isolated plants of "hay-die," but no patches of "take-all," and on the whole the crop was very free from diseases. This was an exceptionally clean crop except for a fair amount of barley,

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and other than this only showed odd plants of oats, charlock, sow thistle, wild lettuce, and Cape weed. On the top of the hill the crop was a bit lighter than the remainder, and but for this was very even. As with the other crop exhibited by Mr. Hunt this one gave every evidence of being exceptionally well farmed, particularly as regards soil cultivation, and, although most of the land is of a sandy nature, it was very well compacted together, thus controlling the "take-all."

8. *Mr. H. C. Whittle, Pinnaroo* (Gluyas).—This Gluyas crop showed very little admixture of any kind, and but for the presence of a little barley and some drake would be good seed. It was almost disease free, showing only a little "red rust" and odd plants of "hay-die." Except for a little barley, some drake, a lot of charlock in patches, and a little sea barley, it was a clean crop. The growth of the crop had been fairly even, but a good deal of it down the centre of the valley had lodged badly.

9. *Mr. M. Kelly, Pinnaroo* (Gluyas 35 acres, and Ford 15 acres).—Both varieties contained a little admixture, but on the whole were nearly true to type. There was very little disease of any kind present in either plot, both kinds only carrying spots of "red rust" and odd plants of "hay-die." The Ford had charlock and poppy fairly thick in patches and a little wild lettuce, and was really clean, but Gluyas had a fair amount of barley, charlock, and poppy, and some wild lettuce, sow thistle, shepherd's purse, sea barley, and oats. Even then it was not a dirty crop except for the barley. The Ford contained some thin patches, and the part of the Gluyas which was sown early was leaning badly, and had lodged in places, but on the whole the crops were nice and regular. The land was really firm and compact, and had the appearance of having received plenty of good, shallow work.

10. *Mr. C. O. Schumacher, Parilla* (Ford).—A fair amount of a brown-chaffed wheat, as well as other varieties, was present in this block of Ford. Besides a little "red rust" and "hay-die" there were a few small and isolated patches of "take-all," but on the whole it was a fairly disease-free crop. This was a nice clean crop with odd plants of barley and drake, patches of hedypnois, and a little charlock and sow thistle. Very good even crop in valley, but a bit lighter on the higher land.

11. *Mr. H. G. Fewings, Pinnaroo* (Currawa 25 acres, and Gluyas 25 acres).—These crops were above the average as regards "purity," but will not give good seed because of the presence of too much barley. The Gluyas was practically disease free, only showing odd plants of "hay-die" and just a little "red rust;" the Currawa showed a few small patches of "take-all" and a little "flag smut," as well as the above-mentioned diseases. Both varieties showed a fair amount of barley and a good lot of charlock, and just a little oats and sheep weed. The crops were nice and even, but some patches of the Gluyas were leaning rather badly. Currawa is very liable to attacks of all diseases except "red rust," and where "take-all" is controlled in this variety it is sure evidence of good soil cultivation, and the cropped land on Mr. Fewings' farm certainly shows this.

—12. *Mr. A. P. Badman, Pinnaroo* (King's Surprise).—Other varieties were present to some small extent in this exhibit. It contained a little "loose smut" and "hay-die," and both flag and sheath were spotted with "red rust," but it was free from "take-all" patches. Of weeds, there was a fair amount of barley, some poppy, and charlock, and a little sow thistle, catchfly, sea barley, wild lettuce, brome grass, sheep weed, and cockspur; but, despite the assortment, it was not a dirty crop except for barley. Part of the crop was very heavy and matted together, but still was a fairly even crop.

—12. *Mr. C. V. O'Loughlin, Pinnaroo* (Walker's Wonder).—This was only fairly true to type, containing a good deal of a white-chaffed wheat, as well as a sprinkling of other kinds. It showed a little "loose smut," "flag smut," and "red rust," with "hay-die" plants scattered throughout the crop, and a fair number of "take-all" patches on both edges of the valley. Besides a fair amount of barley, drake, and charlock (in patches), there was present a little oats, sow thistle, wild lettuce, sea barley, and spear thistle. The crop was very heavy down the centre of the valley, and was fairly even, despite the "take-all" patches on the edges.

—14. *Mr. J. E. Johnston, Pinnaroo* (Gluyas 38 acres, and Queen Fan 12 acres).—The Queen Fan was fairly true to type, but the Gluyas contained a good deal of other wheats. An isolated plant or so in the Gluyas was affected with "bunt," and this variety also showed a little "red rust" and "hay-die," but the Queen Fan had a lot of "hay-die" and a fair number of "take-all" patches, as well as "red rust." The crop was fairly even, despite the presence of "take-all" in the Queen Fan, and the lodging of a fair area of the Gluyas, including a fairly large hollow which contained some inches of water at the time of judging.

—14. *Mr. F. R. Koch, Wilkawatt* (Gluyas).—There was quite a fair amount of King's Early and Bearded Gluyas in this crop. It was almost disease free, only showing a little "red rust" and scattered plants of "hay-die," and there were no patches of "take-all." There was present a fair amount of barley, charlock, and spear thistle, a little sheep weed, cockspur, sow thistle, canary grass, and brome grass, and in a few patches oats were thick. Despite the fact that the crop in the hollows had lodged, and that it was a bit thin on the ridge, it was a fairly even one.

—16. *Mr. A. Fischer, Pinnaroo* (Faun).—Although this crop is very true to type, containing hardly any admixture, it will not produce good seed because of the presence of "bunt." There were a few small patches of "take-all" near the sandhills, scattered "hay-die" plants, and the flag was spotted with "red rust," but very few marks were given for freedom from disease, because of the presence of a lot of "bunt." No barley was present in this crop, but there were plenty of other weeds, making it a fairly dirty crop, the following weeds being in evidence:—A lot in patches of charlock, cockspur, canary grass, and oats, a little barley grass, wild lettuce, spear thistle, sow

thistle, brome grass, and catch fly, and a fair amount of drake. The crop was only fairly even, varying from very heavy lodged patches to some thin places. A glance at the points allotted to this crop shows how an exhibit suffers, from a competition point of view, from poor farming practices. The marks given for apparent yield (44) are comparatively high, and had this entry scored well under the other subdivisions it was quite possible for it to have been placed fifth in this big competition instead of sixteenth.

—16. *Mr. Roy Edwards, Pinnaroo* (Ford).—The “strangers” seen in most crops of Ford entered in this competition were found in this crop, and, beside the flag being spotted with “red rust,” and “hay-die” plants scattered here and there in the crop, there were a few small patches of “take-all.” Not only was the crop dirty with charlock and poppy, but there was a little barley and some oats, wild lettuce, shepherd’s purse, cockspur, and sheep weed. The crop was fairly even, but the southern one was much the best of the three strips.

—18. *Mr. D. Pink, Lameroo* (Currawa).—This block was nearer true to type than most crops of Currawa seen, still it contained some plants of at least three varieties. There was a little “loose smut” and “red rust,” some “hay-die” plants throughout the crop, and quite a lot of “take-all” patches in the centre of the block. The parts of the crop not affected by “take-all” were really clean except for drake, but the diseased patches being rather considerable it could not be classed as very clean, and there was present a lot of drake and some cockspur, charlock, poppy, and catchfly. This was a very even and regular crop except for “take-all” patches.

—18. *Mr. H. J. Blake, Lameroo* (Gluyas 20 acres, Canberra 20 acres, and Dollar 10 acres).—Both Gluyas and Canberra were very true to type, the Gluyas being much above the average, but the Dollar was only fair. All crops were affected by “bunt,” and each showed a few “hay-die” plants, and a little “loose smut” was seen in the Canberra. No barley was present in any of the varieties, and except for charlock and oats (in patches) the crop was clean, only showing, as well as the above, a little sheep weed, drake, hard grass, and spear thistle. The Dollar was very short-strawed, but each block was nice and regular.

20. *Mr. P. J. Edwards, Pinnaroo* (Ford).—This Ford was only fairly true to type, and it contained the brown-chaffed and bearded wheats seen in most crops of this variety grown at Pinnaroo. It was nearly disease-free, only showing odd plants with “loose smut” and “hay die,” and just a little “red rust” on the flag. The crop had a little barley and some drake present, as well as a lot of charlock, cockspur, and poppy, and odd plants of oats and sow thistle. It was rather an uneven crop, and was badly thinned near the large rabbit warren.

—21. *Mr. F. R. Koch, Wilkawatt* (Currawa).—There was not much admixture in this crop, nor did it show much disease, there being only

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a little "red rust," some "loose smut," and scattered plants of "hay-die." This was one of the few crops of Currawa seen which was not affected by patches of "take-all." It was by no means a clean crop, containing a fair amount of barley, a lot of oats in patches, some charlock and poppy, and a little drake, canary grass, spear thistle, slender thistle, and cockspur. It was only fairly even, and contained some thin patches.

=21. *Mr. J. R. McKenzie, Pinnaroo* (Gluyas).—Although this crop contained a little of other kinds it was really true to type, but would not be good seed, because of the presence of "bunt," of which there was a lot, accompanied by a little "red rust" and few plants of "hay-die." There was quite a fair amount of barley and a little charlock, otherwise it was a nice clean crop. It was a fairly even crop, leaning in a few patches, but had not lodged.

=21. *Mr. K. Goldsworthy, Parilla* (Ford).—There was more than the average amount of admixture in this crop, including a purple-strawed wheat, but it was fairly disease free, showing only a little "flag smut," "red rust," and scattered "hay-die" plants. Besides a fair amount of barley and drake there were bad patches of oats, charlock, and poppy, and a little canary grass, wild lettuce, brome grass, and cockspur. It was an even crop, except for a few places which were thin because of poor germination, and a drill width through crop without manure.

24. *Mr. C. W. Neindorf, Parilla* (Kerley's Early 32 acres, and Gluyas 18 acres).—The Kerley's Early was badly mixed, and the Gluyas was only fair as regards trueness to type. "Bunt" was prevalent in both crops, as well as a little "loose smut" and a sprinkling of "hay-die" plants. It was nice and clean except for a lot of barley and some drake, and only contained otherwise a little charlock, sow thistle, sea barley, and spear thistle. Both blocks of wheat were nice and even. Had more care been shown in the control of "bunt," and good seed been used to have reduced the amount of barley and improved the trueness to type, this crop would have been well up the list, because after having received the 43.5 marks for apparent yield it was quite possible for this entry to have been fifth instead of twenty-fourth.

25. *Mr. W. Arnold, Parilla* (Ford).—The admixture in this crop was not so noticeable as in some other entries of Ford, still it contained some of at least three other varieties, including the purple-strawed wheat. There were a few isolated plants affected with "bunt," a scanty sprinkling of "hay-die" plants, and odd, very small patches of "take-all." There was a fair amount of drake and odd plants of barley, some patches rather bad with oats, charlock, and poppy, and a little cockspur and sheep weed. Despite the presence of some weak patches it was a fairly even crop.

26. *Mr. E. Slater, Pinnaroo* (Early Bart).—As the allotted marks show, this variety was rather badly "mixed." Other than a good lot of "red rust" on flag and stem, it only showed "hay-die" plants

scattered throughout and a few very small patches of "take-all." There was a lot of charlock in the hollows, a fair amount of poppy, and a little sow thistle, catchfly, and sheep weed. It was a nice even crop, but with a lot of small heads, most of which were barren.

—27. *Mr. A. F. Hawthorn, Pinnaroo* (Gluyas).—There was only a little admixture in this crop, and it would make good seed except for just a little barley. A little "flag smut" and "hay-die" was present, as well as a few small patches of "take-all." This was a fairly clean crop, for other than a few patches rather bad with charlock it only contained small amounts of barley, drake, sea barley, oats, wild lettuce, spear thistle, and poppy. The heavy patches were leaning badly, and other parts were thin; still it was fairly even.

—27. *Mr. A. Klein, Pinnaroo* (Faun 28 acres, and Joffre 22 acres).—Both varieties were nice and true to type, being a good deal above the average in this respect. "Bunt" was in both crops, particularly the Faun, and Joffre contained a lot of "take-all," whilst in Faun only a few small patches of this disease were to be seen, and both varieties had the flag spotted with "red rust." Both blocks were fairly clean, showing some poppy, sea barley, and drake, and a little charlock, wild lettuce, oats, and sow thistles. The Faun was fairly regular, but Joffre was patchy.

—29. *Mr. A. F. Young, Pinnaroo* (Ford 25 acres, Daphne 15 acres, and Caliph 10 acres).—The Ford and Caliph contained a good deal of other kinds, and were far from pure, but the Daphne only had a little mixed with it. The whole crop was nearly disease free, all varieties only showing a little "red rust" and scattered "hay-die" plants, whilst the Daphne also had a few small patches of "take-all." On the whole the crops were fairly clean, especially the Daphne, which had patches of charlock and sea barley and a little oats and sow thistles, but the other varieties contained a fair amount of barley, a lot of drake, some sow thistle, sea barley, and poppy, and a little cockspur, oats, and sow thistle. Ford was even, Daphne fairly so, and Caliph rather irregular, half of the crop being very short and having very small heads.

—29. *Messrs. V. & G. McCormack, Parilla* (Gluyas).—There were a lot of plants of other wheats in this crop, but it was fairly disease free, with a little "red rust," a few small patches of "take-all" and "hay-die" plants scattered through it. Barley was present, as well as a little oats, sow thistle, sea barley, charlock, and spear thistle; but on the whole it was a clean crop except for barley. Although tangled a little in places it was fairly even.

—31. *Mr. J. L. Koch, Lameroo* (Gluyas).—There were at least three varieties in admixture with this Gluyas, and it was only fairly true to type. No "take-all" patches were seen in this crop, but there were odd plants of "hay-die" and a little "red rust." But for the presence of a lot of charlock this was a clean crop, and only contained isolated plants of barley and drake, and a little sea barley and sow thistles.

A few patches in the hollows had lodged, and the crop was thin on the sand; otherwise it was fairly even.

=31. *Mr. C. H. E. Hentschke, Lameroo* (Ford).—This was only fairly true to type, as it contained quite a fair amount of a number of other kinds, but it was almost disease free, showing only a little "red rust" and a few scattered plants of "hay-die." Although fairly clean it showed odd plants of barley and a little drake, sea barley, silver grass, oats, sow thistle, spear thistle, and Cape weed. The crop was rather uneven, having thin patches scattered throughout.

=31. *Mr. J. A. Hamilton, Lameroo* (Daphne 25 acres, and Currawa 25 acres).—The Daphne was fairly true to type, but the Currawa had a fair amount of admixture. There was some "loose smut" in the Currawa, and both blocks had a few "take-all" patches and scattered plants of "hay-die." A little barley and drake were present, as well as some sow thistle, charlock, oats, brome grass, spear thistle, sheep weed, poppy, and cockspur; still the crops were not very dirty. The Currawa was rather irregular.

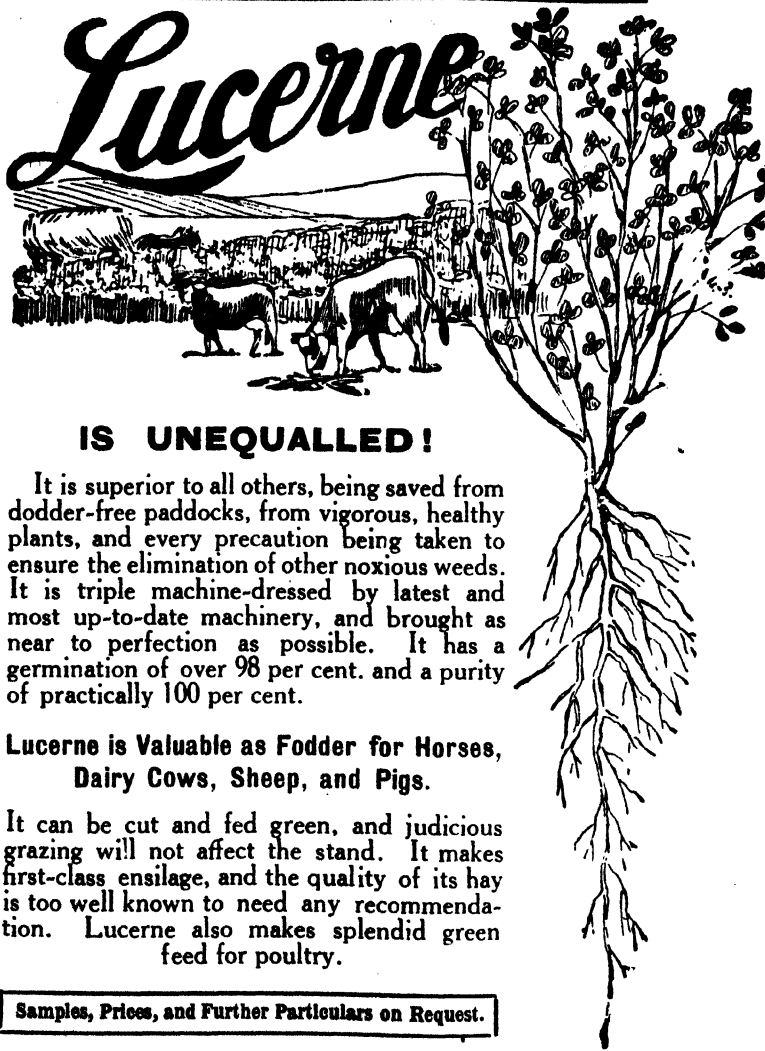
=34. *Mr. R. B. Koch, Lameroo* (Yandilla King).—Although this crop contained a few plants of other kinds it was much above the average, and, being free from barley and "bunt," should produce good seed. There was a little "take-all," "hay-die," and "loose smut," and some "red rust" present, but the crop was fairly "disease free." Oats were really bad, with a fair amount of charlock and poppy, and some canary grass, sheep weed, and sea barley. The evenness of this crop was destroyed by oats. Before this crop headed it must have looked very well, but as a wheat crop it was ruined by wild oats.

=34. *Mr. A. F. Young, Pinnaroo* (Late Gluyas).—This crop did not contain many "strangers," but would not give good seed because of barley and drake. "Hay-die" plants were scattered throughout the crop, there were some small patches of "take-all," and the flag was spotted with "red rust." There was a fair amount of barley and drake, some charlock, and a little sow thistle, wild lettuce, brome grass, oats, cockspur, and sea barley. It was only a fairly even crop.

=34. *Messrs. W. B. Davis & Sons, Pinnaroo* (Dan).—There was a fair amount of a brown-chaffed wheat, as well as other "strangers." The flag was spotted with "red rust," and "hay-die" plants were scattered through the crop. It was fairly clean, but showed a little barley, a fair amount of charlock, poppy, oats, sow thistle, and sheep weed, and a little wild lettuce. Although lodged in a few places it was fairly even.

=37. *Mr. R. B. Koch, Lameroo* (Currawa).—As with Mr. Koch's crop of Yandilla King this should produce good seed, because it shows very little admixture and neither barley nor "bunt." There was a little "loose smut," a few small patches of "take-all," and scattered "hay-die" plants. The crop showed a lot of charlock and poppy, and some sheep weed, drake, sow thistle, spear thistle, sea barley, cockspur, soapwort, and oats. It was a little irregular.

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—37. *Mr. C. A. E. Schiller, Pinnaroo* (Queen Fan).—This was a fairly "pure" crop, but enough barley and drake were present to spoil it for seed. There was just a little "red rust" and "loose smut," a fair amount of "hay-die" plants, and quite a lot of "take-all" patches. Some barley and drake, as well as a little charlock, sea barley, sow thistle, silver grass, sheep weed, oats, and wild lettuce were present. The "take-all" patches spoil the regularity of the crop.

—37. *Messrs. Foale & Sons, Parilla* (Queen Fan).—Taller plants and bearded ones were visible, but it was fairly true to type. There was a sprinkling of "bunt" throughout the crop, as well as a little "red rust," a few patches of "take-all," and a lot of "hay-die" plants. Some barley and a little drake were seen, with oats bad in patches, and a little charlock, sheep weed, canary grass, and spear thistle. It was nice and even except for patches of oats.

40. *Mr. F. G. Bonnin, Pinnaroo* (Gluyas).—The "purity" of this crop was no better than average. One portion of the crop contained a lot of "bunt," whilst most of the flag was lightly spotted with "red rust," and there was a light sprinkling of "hay-die" plants. There was some barley and drake, a little sea barley, canary grass, and soapwort, and patches were bad with charlock and oats. A few patches were light, otherwise it was fairly even.

—41. *Mr. E. J. Trowbridge, Lameroo* (Minister).—This crop was not very true to type, containing at least three other varieties. It showed a little "loose smut," a few small patches of "take-all," and a sprinkling of "hay-die" plants. There was a little barley, some drake and charlock, and a little oats, poppy, soapwort, spear thistle, sea barley, canary grass, and Cape weed. This was a light crop with a few very heavy patches.

—41. *Mr. P. M. Rice, Pinnaroo* (Federation 25 acres, and Currawa 25 acres).—The Currawa was nice and true to type, but Federation showed some of the taller and other white-chaffed wheats usually found in this variety. Both kinds showed a little "flag smut," "loose smut," and "red rust," some patches of "take-all," and "hay-die" plants were scattered through the crop. They were both fairly clean, but each had a lot of charlock, whilst the Federation also contained odd plants of barley, some drake, and a little sea barley, wild lettuce, sow thistle, and spear thistle, and Currawa had only very small amounts of these weeds. The crops were fairly regular, and would have been much more so but for "take-all" patches.

—43. *Mr. F. D. Lang, Parilla* (Currawa).—At least three other kinds of wheat were noticeable. Besides some "red rust" and "loose smut" there were a fair number of fairly large patches of "take all" and a lot of "hay-die" plants. This was a very clean crop; still it showed a little barley, drake, charlock, sow thistle, brome grass, spear thistle, and oats. It was an irregular crop because of "take-all," and a light crop on the sand.

—43. *Mr. C. H. Phillis, Parilla* (Kerley's Early).—This crop showed a lot of admixture, but it was fairly disease free, containing a

little "red rust" and "loose smut," a few very small patches of "take-all," and a thin sprinkling of "hay-die" plants. It was fairly clean, except for some barley, drake, charlock, and poppy, and a little sea barley, catch fly, oats, and spear thistle. It was a fairly even crop but thin.

45. *Mr. J. H. Entwistle, Parilla (Kerley's Early).*—This crop contained quite a fair amount of at least three other varieties, and besides a little "loose smut," an isolated plant or so of "bunt," and a sprinkling of "hay-die" plants, it showed a lot of patches of "take-all." The parts of this crop not affected with "take-all" were nice and clean, but those other patches contained a lot of poppy and charlock and a little drake, sea barley, and sow thistle. The evenness of the crop was spoilt by "take-all."

46. *Messrs. P. H. & F. S. Jones, Pinnaroo (Major 40 acres, and Yandilla King 10 acres).*—Neither of these two crops was at all true to type, and besides some "red rust" on the flag, both showed "hay-die" plants and "take-all" patches, and the Major was really badly affected by this latter disease. The Major was fairly dirty, with a lot of drake, poppy, charlock, and oats (in patches), isolated plants of barley, and a little sow thistle, spear thistle, slender thistle, and cockspur; the Yandilla King had a lot of charlock and poppy, and a little drake, oats, canary grass, and cockspur. "Take-all" made the main crop (Major) rather uneven.

47. *Mr. R. J. Billing, Pinnaroo (Ford).*—The varieties seen in nearly every other crop of Ford grown in the district were noticeable in this one also. Just a little "red rust" was present, very few small patches of "take-all," and a fair number of "hay-die" plants. Of weeds, there was a fair amount of barley, a lot of drake, and some charlock, poppy, sea barley, sow thistle, wild lettuce, and oats. A few patches were really heavy and leaning, but most of the crop was light.

—48. *Mr. W. S. Jacob, Parilla (Yandilla King 20 acres, Kerley's Early 15 acres, and Currawa 15 acres).*—The Currawa was about average as regards trueness to type, but the other two contained a good deal of admixture. All kinds showed "red rust," scattered "hay-die" plants, and a little "take-all," but the Currawa had "loose smut" and a fair amount of "take-all." The crops were fairly clean, although Kerley's Early had a lot of barley (the others only showing a little of this weed), whilst the following weeds were present in the crop as a whole:—Charlock, poppy, brome grass, oats, sow thistle, and sea barley. The Currawa was a bit irregular, the others being better, but Kerley's Early was shedding grain at the time of inspection.

—48. *Mr. G. E. Gregory, Parilla (Yandilla King 25 acres, and Golden Return 25 acres).*—Both varieties were rather badly mixed. "Red rust," a few small patches of "take-all," and scattered "hay-die" plants were seen in both, and Yandilla King had quite a fair amount of "bunt." Golden Return was free from barley, and was fairly clean except for charlock and poppy, whilst Yandilla King

had a fair amount of barley, drake, charlock, and poppy, and both blocks had some sheep weed, saffron thistle, cockspur, oats, sea barley, and catch fly. The crop was only fairly even, with the Yandilla King thin and light.

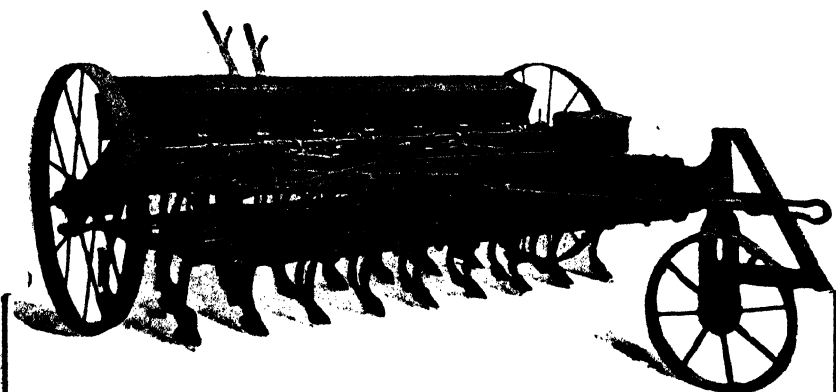
—48. *Mr. R. L. McKenzie, Pinnaroo* (Ford).—There was a lot of Gluyas in this crop (one strip half and half) as well as other kinds. The flag was spotted with "red rust," and "hay-die" plants were scattered throughout the crop. There was a fair amount of barley and drake, a lot of oats and charlock, some sheep weed and poppy, and a little wild lettuce and catchfly. The crop was even in height, but oats thinned it in many places.

51. *Mr. John Gray, Parilla* (Turvey).—A brown-chaffed wheat was plentiful in this crop. There was a little "loose smut" and "flag smut," a lot of "red rust," many "hay-die" plants, and a lot of "take-all" patches. The crop was clean except for some barley and drake and a little sea barley, stemless horse thistle, charlock, spear thistle, soapwort, and sheep weed. It was a very flaggy crop, showing a few thin patches due to faulty germination; otherwise fairly even.

52. *Mr. S. J. Venning, Pinnaroo* (Early Bart 25 acres, Western Wonder, 12½ acres, and Queen Fan 12½ acres).—All varieties were only fair as regards trueness to type. The Queen Fan showed much less "red rust" than the others, and the Western Wonder had less "take-all," a disease which was bad in the other two kinds; "hay-die" plants were scattered through all crops. Early Bart contained a little "flag smut" and isolated plants with "bunt." The Early Bart was fairly clean, containing a fair amount of poppy and charlock and a little sow thistle, wild lettuce, drake, and oats; but both other varieties had a fair amount of barley, a lot of poppy, and some charlock, sow thistle, wild lettuce, slender thistle, and drake. The crops were fairly even except for "take-all" patches.

53. *Messrs. E. H. Leake & Sons, Pinnaroo* (Major).—Although there were heads of a number of different varieties visible, they were few in number. There was a sprinkling of "bunt" through the crop, a lot of "take-all," a little "flag smut," "loose smut," and "red rust." The crop was fairly clean, but contained a little barley, a lot of drake a fair amount of charlock, and a little wild lettuce, sow thistle, poppy, and oats. The "take-all" made the crop rather irregular.

54. *Mr. G. Tiller, Pinnaroo* (Ford 35 acres, and King's White 15 acres).—The crops showed only a little admixture, the Ford being better than most other crops of this variety grown in the district. Ford showed little "red rust," some "take-all" patches, and a good lot of plants affected with "hay-die," whilst King's White carried a lot of "bunt," "red rust," "take-all" patches, and "hay-die" plants. There was no barley in these crops, but charlock was bad in places, some poppy, sea barley, and cockspur, and a little oats, sheep weed, wild lettuce, sow thistle, and canary grass were present. The crops were rather uneven.



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55. *Mr. H. Ledger, Pinnaroo* (Gluyas).—There was a lot of a white-chaffed wheat as well as other strangers present. The flag was just spotted with "red rust," a few plants were affected with "bunt," there were a few small patches of "take-all," and "hay-die" plants were scattered through the crop. This was a fairly clean crop, other than for a fair amount of barley, drake, and cockspur, and a little sea barley and oats. It was only a light crop, fairly regular but for "take-all" patches, and, considering that it was grown on "stubble" land, was quite good.

—56. *Mr. S. J. Venning, Pinnaroo* (Currawa).—There was enough admixture of other varieties to be easily noticeable, but the crop was not bad in this respect. Besides a little "red rust," "loose smut," and "flag smut" this crop was badly affected by "take-all." Although there was a lot of charlock present, a fair amount of poppy, and a little wild lettuce, sow thistle, cockspur, catchfly, and saffron thistle, the crop was fairly clean. The presence of so much "take-all" spoilt the evenness of this exhibit.

—56. *Mr. G. H. Twelftree, Lameroo* (Currawa 25 acres, Daphne 15 acres, and J7 10 acres).—The J7 was nice and "pure," but the others, particularly the Currawa, contained "strangers." Both Currawa and Daphne showed a little "red rust," the J7 was heavily spotted, and all three blocks contained a fair number of "take-all" patches and plenty of "hay-die" plants. All crops were dirty with charlock and poppy, and also had some oats and spear thistle, whilst Currawa and Daphne also had a little barley and drake, a fair amount of sheep weed and soapwort, and a little sow thistle and cockspur. The crops were thin and irregular.

58. *Mr. C. J. Hancock, Parilla* (Late Gluyas).—This crop was rather badly mixed. It showed a little "red rust" on the flag, some "take-all" patches in one corner, and "hay-die" plants scattered through the crop. There was a lot of barley, a little drake, a lot of charlock, some sea barley, and sow thistle, and a little brome grass, spear thistle, oats, and cockspur. It was a bit irregular through running light on the sandhill.

59. *Mr. A. G. Burns, Lameroo* (Gluyas, Daphne, and Currawa).—This field was drilled "round and round" without separating the varieties, and the two dark-chaffed wheats and one light one made quite an effective pattern, but did not help the marks for trueness to type. The crop was almost disease free, with only a little "red rust" and a light sprinkling of "hay-die" plants. It was very clean except for barley, of which there was a lot in the Gluyas, and a little of drake, oats, sheep weed, charlock, cockspur, spear thistle, and soapwort. The crop was light, but was fairly even.

—60. *Mr. A. Camens, Pinnaroo* (Yandilla King 30 acres, and Queen Fan 20 acres).—The Yandilla King was poorer than the Queen Fan as regards trueness to type. There was a little "red rust," a heavy sprinkling of "hay-die" plants and "take-all" patches in both crops, but the Yandilla King was much the worse of the two. The

Queen Fan, which was otherwise the cleaner of the two, contained some barley, and both blocks had drake oats, Cape weed, hard grass, sea barley, poppy, spear thistle, wild lettuce, and silver grass. The crops were rather irregular.

=60. *Mr. L. A. Shannon, Parilla* (Ford and Kerley's Early).—The Ford contained strips of Kerley's Early, as well as other kinds, and the Kerley's Early was only fair as regards "purity." There was a lot of "bunt" in the Ford, as well as a little "red rust," scattered "hay-die" plants, and a fair amount of "take-all," and the Kerley's Early was heavily spotted with "red rust," had a fair amount of "take-all" in patches, and scattered "hay-die" plants. Both varieties contained a fair amount of barley and a little drake, were dirty with oats, and had some sow thistle, spear thistle, charlock, cockspur, canary grass, sea barley, and soapwort. The crops were rather uneven, some of which was brought about by rabbits.

=62. *Messrs. W. B. Davis & Sons, Pinnaroo* (Caliph 30 acres, and Dan 20 acres).—Both plots of wheat were fairly true to type. The Caliph contained a lot of "bunt," and the Dan had isolated plants affected by it; both varieties had the flag spotted with "red rust," and showed a few plants of "hay-die," and the Caliph had a little "loose smut." The Dan was free from barley, and was really clean, except for charlock, but Caliph had a lot of barley and a little charlock, spear thistle, sow thistle, and sea barley. Caliph was much more regular than the Dan, but they were both light crops, and were "tipped" rather badly.

=62. *Messrs. Colwill Bros., Parilla* (Kerley's Early).—There was a lot of admixture visible in this crop, and besides some "loose smut" and "flag smut" it was heavily spotted with "red rust," and was very badly affected with "take-all." The crop was rather dirty, containing a fair amount of barley, charlock, and poppy, and some spear thistle, sow thistle, stemless horse thistle, and sea barley, and a little wild lettuce and oats. Crop was "tipped," had lodged in the heavy patches, was shedding, and the presence of so much "take-all" naturally spoilt its evenness.

OBSERVATIONS AND RECOMMENDATIONS.

One could hardly inspect so many crops in this district without noticing great differences as to the methods employed to force profits from the same class of land, and while some appear to be very successful, others are obviously practising poor methods. As crop growers, quite a lot of farmers could certainly be described as "good" in every sense of the word, whereas others hardly come into this class, and it seems that these latter only reach a lower standard because they ignore some of the details which are quite necessary if consistently good crops are to be grown. Some weaknesses are rather common in the district, whilst others, although of rarer occurrence, are prevalent enough to be noticeable, and when these faults are corrected increased yields will be secured, and in most cases at no greater cost

than at present. The most important of the controllable troubles still common in this district, and which stand in need of correction in the near future, are:—

1. "Take-all" and "hay-die."
2. "Bunt" or "stinking smut."
3. Unsuitable varieties.
4. Overcropping sand.
5. Bad weeds.
6. Mixtures of varieties.

1. "Take-all" and "Hay-die."

Whether these troubles of the wheat crop are caused by *Ophiobolus graminis* or *Helminthosporium* spp. the symptoms and effects are very similar, and the methods of control the same. Much has been said of late years of the impossibility of successfully combating this disease, and suggestions have even been made that a bonus should be offered by the Government for the discovery of a method of control, yet at the same time it is well known that every wheat-growing district in the State suffered from the ravages of the disease in the early days of settlement, and all of them have learned to control it in time, and, further, in every district where much trouble has been experienced, there are some farmers who control it from the outset, and others who are troubled for years after the majority have mastered it. In the County of Chandos at the present time there are farmers growing crops practically free from the disease, whilst adjoining crops are very badly affected, and in one case I saw a whole field of 150 acres or more practically quite free from "take-all," whereas on the opposite side of a fence was a crop very badly affected by the disease. Although many farmers who control the trouble could not explain what they do towards this end, the fact remains that it is controlled by them, and as they do not use different varieties, different manures, or more or less of either of them than do some of their neighbors, it appears that their freedom from the trouble is largely a matter of the way they cultivate their soils, and correct soil preparation certainly does seem to be the most important factor tending to control this terrible scourge.

The appearance and effects in the field of *Ophiobolus* and *Helminthosporium* are so very similar that from a farmer's point of view they can be treated as one, and it can then be said that the disease is a fungus growth living on and so affecting the young wheat plants, and should rather be known as wheat-stem-killer than "take-all," as it mainly affects the bases of the stems of the wheat plant, and when present to any great extent is so severe on the plants that they only grow a few inches high before dying back. In the field it affects patches of the wheat crops, and can be recognised by the affected patches being more or less circular in shape with their centres quite bare, and the plants in the diseased circle gradually improving until the healthy plants on the edge of the ring are reached. The affected plants are usually easily recognised by the fact that the bottom two

inches or so of the stems is more or less covered with a brownish powder, or at all events is stained a brownish color. This latter means of recognition is of importance to the farmer, as the affection of the wheat with which this disease is most often confounded is the result of climatic action, and usually spoken of in this State as the "blighting off" of the wheat crop.

It has been the experience of most farmers, especially in low rainfall areas, that once a field has been affected with take-all, if wheat be grown there as the next crop, even on fallow, it will be affected by the disease, and very possibly have a worse attack than the previous crop. Also, that unless something be done to check the disease, wheat growing will have to be given up on that particular land for a time, and some other crop grown.

INFECTION OF WHEAT CROPS BY "TAKE-ALL."

As this parasitic fungus lives on the base of the stems and roots of the wheat plant, and as the badly affected plants do not produce heads of grain, the chances are that the grain harvested from affected crops and used for seed the following year is not affected with the spores of the disease. The infection of the crops is most likely brought about in the soil, more particularly from the stems of the plants that are buried when the soil is being ploughed.

PREVENTIVE TREATMENT FOR "TAKE-ALL."

(1) As the straw left after harvesting an affected wheat crop is the most likely means of infection, the first step in the eradication of the disease should be the burning of the stubble. This will actually burn much affected material, and in places at least will kill many spores on the underground stems and roots by the heat generated.

(2) As the fungus has been discovered on many of the plants that are usually found growing on our wheat lands, properly working the fallows, and keeping them free from all weeds will tend to reduce the disease.

(3) One crop that will grow more or less well wherever wheat can be grown well—the oat crop—is but seldom, and then never badly, affected by this disease. This being so, when wheat crops are affected, the disease can be checked on that land by the growing of oats instead of wheat for a few seasons, especially if this is done on well-worked fallow land. The oats not being readily attacked by the fungus tend to starve it out of the land.

(4) Until the fungus causing the trouble was isolated a few years ago, it was usual, in this State at any rate, to consider the disease as being a mechanical one. It is not long ago that a common saying amongst farmers was, "Late fallow brings 'take-all,'" and also, "Ploughing in a lot of straw or rubbish brings 'take-all.'" These two things—late fallow and ploughing in much straw—certainly appear to encourage the disease, so much so that I personally believe that the holding of the disease in check depends more on the mechanical condition of the soil than on anything.

The reason that late fallow and ploughing in much straw encourage the "take-all" disease appears to rest on the fact that in most seasons they do not tend toward soil conditions ideally favorable to the growth of wheat, particularly when the wheat is in its earlier stages, when the disease is most active. From studying the disease for some years now I am convinced of the fact that even in soil more or less badly infected with this disease, if the wheat crop gets a really good start and continues in good healthy growth there will be hardly any evidence of the trouble. This healthy growth depends very largely on the soil being in a state of good mechanical condition, and late fallow and much dry organic matter in the soil, as a rule by no means give mechanical condition good enough to promote this growth. In its simplest form the ideal seed bed for wheat consists of soil that has been ploughed up and then so worked that only the immediate surface 2 in. or so is loose, and the soil immediately under it firmly compacted together. It is in a seed bed such as this that wheat will give its best yields, other things being equal, and I feel quite convinced that if seed beds like that described were always attained we would hardly know what "take-all" is. In the ordinary operations of bare fallowing, obtaining this seed bed is one of our main objects, even if it is done in most cases unconsciously; and if the land is ploughed early, the rains that fall compact the under surface by running the particles together, and we cultivate the surface of the land to keep it free from strong crusts and from weeds. These operations get us somewhere near the ideal seed bed. But in the case of late fallow the ploughing is usually done after the heavy rains of the year are finished, and so not enough rains fall throughout the time between ploughing and seeding to compact the under surface soil. This leaves the soil, as it also does when a large bulk of organic matter is ploughed in, with more or less large spaces in the under layers, which, when the roots of the wheat plants reach them, naturally give a check to the growth of the plants; and, unfortunately, to make it worse, this check to the plants comes just at the time when the fungus is most active and when the wheat plants are weakest. In all land that is cleared, i.e., free from stumps, the producing of good mechanical condition of the soil or an ideal seed bed for wheat can be brought about by the use of land rollers. As this disease spreads the use of rollers is becoming more necessary, and instead of depending so much on the rains that fall after the seed is in the soil to compact it together, as is the common practice at present, rolling the land will become just as important and necessary an operation as is harrowing. In practically all seasons a heavy rolling of the land is advantageous, but it is an essential operation when rains sufficiently heavy to compact the soil have not fallen on the fallowed land.

(5) If the early part of the winter should prove to be comparatively "dry," as is not very unusual in much of our wheat-growing country, the land sown "early" very often remains loose and open throughout the year, and "take-all" sometimes plays havoc with the wheat crops sown in such conditions. With fields where "take-all" is feared,

the seeding should not be done until "late" in the season, the object being to wait until the winter rains have been sufficiently heavy to thoroughly compact the soil together. If the seeding is so long delayed whilst waiting for the rains, that it becomes very late in the season, only "early" varieties should be sown.

(6) Some varieties certainly appear to be more resistant to this disease than are others sometimes grown, and in this connection the following apparently resistant varieties are suggested, Gluyas, Late Gluyas, Ford, Walker's Wonder, Leak's Rustproof, and Yandilla King.

2. "*Bunt*" or "*Stinking Smut*" (*Tilletia tritici*).

Of the smuts, "bunt" is by far the worst that South Australian farmers have to contend with. With this fungus the fertile branches are produced in the ear of the wheat plant, and the spores are formed inside the skin which in ordinary circumstances would have enveloped the wheat grain. This collection of spores, covered by a skin as it is, is known as a "bunt" ball, or "smut" ball, and consists of a mass of evil-smelling dark-brownish powder, from which fact arises its name, "stinking smut." The damage done by the disease is the reduction of yield through the grain being replaced by the spores, and the lessened value of the grain for milling purposes, because the offensive odor and dark color of the spores spoil both the color and odor of the flour made from affected wheat.

INFECTION OF WHEAT CROPS BY "BUNT."

As the collections of spores are contained in the skins of the wheat grains, and these are held by the glumes or chaff of the wheat heads exactly as if they were sound grains, the diseased heads are harvested with the healthy ones, and the spores of the "bunt" are mixed with the good grain at harvest time; any of this grain used for seed is already infected by the disease, and given ordinary seeding conditions the resulting crop will be diseased. This is the main infection for "bunt;" indeed, the infection of the seed is the only one of any account in ordinary practice, and if not brought about through the crop being "bunty" it is often done by using machines already covered with spores, or putting the grain for seed into bags that had previously held "bunty" grain.

PREVENTIVE TREATMENT FOR "BUNT."

The most practical way of preventing this disease is to kill the spores before the grain is sown at seeding time by treating the seed with a substance that will prevent the spores from germinating without injuriously affecting the wheat grains. Of these substances, a solution of copper sulphate or bluestone in water is effective.

COPPER SULPHATE AS A "PICKLE" TO PREVENT "BUNT."

This treatment of seed with a solution of copper sulphate to be effective in the killing of the "bunt" without injuring the grain rests mainly on the two following points:—(a) The strength of the solution in water, and (b) the thorough wetting of all the grain. (a) The

solution should be at least what is known as a 1 per cent. solution, and not more than $1\frac{1}{2}$ per cent. solution, except in very exceptional cases. These strengths are roughly estimated by 1lb. of copper sulphate in 10galls. of water for a 1 per cent. solution, and $1\frac{1}{2}$ lbs. copper sulphate in 10galls. of water for a $1\frac{1}{2}$ per cent. solution; 1 per cent is strong enough if the seed to be pickled is not very badly infected, $1\frac{1}{2}$ per cent. makes it a little surer, but is unnecessarily strong in anything but bad cases, and over $1\frac{1}{2}$ per cent. certainly kills all the "bunt," but also reduces the germinating power of the grain rather considerably. (b) To thoroughly wet the grain with the solution some method must be used that rubs the grains well together; if this is not done air bubbles remain on the surfaces of the grains, and many spores of the fungus could nestle under these and never become wet. This can be illustrated by dropping a handful of grain into a bottle containing some solution, when the air bubbles on grains are easily seen, and if the grain be left in the bottle for a week the bubbles will be found to remain intact. That each of these air bubbles might cover a lot of the spores is easily recognised if you remember that the spores are microscopic, and so small that it takes from between 2,000 and 3,000 of them placed alongside one another to extend 1in. The best method of rubbing these grains together so as to break these air bubbles is by using a shovel to turn a heap of loose wheat on a floor after pouring the requisite amount of solution on to the heap; this method will necessitate the use of about $2\frac{1}{2}$ galls. of solution to a bag of seed, and should be turned over from three to five times. Where no suitable floor is available the next best method of pickling with a copper sulphate solution is to put about 1bush. of seed in a bag, tie loosely, and immerse the bag in the solution for five minutes or so. There are a number of pickling machines on the market, most of which rely largely on the fact that all unbroken "bunt" balls and other light material floats on the surface of the liquid and can be skimmed off. This is certainly a great advantage when the seed is dirty and badly "bunted," but it is only one part of the operation, and really not as important as rubbing the grains together to get them thoroughly wet. Seed that has been pickled with a bluestone solution can be left almost indefinitely before sowing, provided that it is thoroughly dried before being reugged. Indeed, the germination of pickled seed that has been allowed to dry and kept for some time is usually greater than if the seed is sown soon after pickling.

CONTROLLING "BUNT" BY FORMALIN.

Another liquid used fairly largely in Australia as a preventive to "bunt" is formalin. This to be effective should be at least a $\frac{1}{4}$ per cent. solution, i.e., 1lb. of commercial formalin in 40galls. of water. When this substance has been used the grain should be sown when still damp immediately after pickling; if allowed to dry it should not be sown for at least a fortnight, or if it becomes necessary to use the seed before that time is up it should be thoroughly wetted with water. Once grain pickled with formalin has become dry its germinating

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power gets less for a week, but after that time it gradually improves until one month after treatment. Formalin is a solution of a colorless gas in water, so that it is easily adulterated. In commercial formalin this should be a 40 per cent. solution of formaldehyde gas in water, but some formalin supplied to farmers at Nhill one year on analysis only showed 20 per cent. formaldehyde. Formalin is an effective pickle when guaranteed material is used, and when ordinary care is taken, but because of its liability to adulteration and the need of immediately sowing the grain, bluestone at the present is the more reliable of the two.

"DRY" PICKLING WITH COPPER CARBONATE POWDER.

The two well-known pickling solutions—bluestone and formalin—are quite effective in the control of "bunt" when properly handled, and anyone who does not succeed in eradicating this disease from their wheat crops by using these "pickles" should try some other method. For some years now experiments have been conducted in most of the wheat-growing countries of the world, testing the effectiveness of dusting the seed wheat with finely powdered copper carbonate for the control of "bunt." These experiments have shown "dry" copper carbonate to be a fairly effective fungicide for the control of "bunt," provided (a) the material is so finely ground that about 90 per cent. of it will pass through a 200-mesh screen, (b) 2ozs. of fine copper carbonate containing 50 to 55 per cent. metallic copper be used to each bushel of seed, (c) the copper carbonate dust and the wheat be thoroughly well mixed together.

The advantage of the "dry" copper carbonate treatment over the ordinary "wet" methods is that the germination of the grain is not interfered with nor is the early growth of the wheat plants delayed. Seed treated in this way germinates, and makes very strong "early" growth in exactly the same manner as does unpickled seed.

The chief disadvantage of using copper carbonate is that the powder is of a corrosive nature, and if inhaled by human beings leads to serious irritation of the membranes. This danger necessitates the use of a dustproof machine for the treatment of the seed, and operators should wear a dust mask, or at least place a wet handkerchief over nose and mouth. Machines for mixing copper carbonate with the seed wheat are on the market, and most suppliers of farmers' requisites now stock copper carbonate, so that anyone who is not too successful in controlling "bunt" can easily secure everything to enable him to try this comparatively new method. Anyone possessing a box churn not in use for buttermaking has a good dustproof "pickler" at hand, and the farmer who likes using carpenter's tools can easily construct a dusting machine on the same principle as the box churn, and in such a rectangular box there is no need to put mixers or stirrers, because the mere falling of the grain from side to side as the box is slowly revolved very thoroughly mixes it.

The pickling can be done at any time between harvest and seeding, and the seed can be sown when the soil is either "wet" or "dry" in the same way as with "unpickled" seed.

3. *Unsuitable Varieties.*

It is a well-known fact that only certain types of wheats will give maximum returns in any particular set of natural conditions, and, although many crops were seen of varieties of wheat, obviously suitable to the conditions obtaining in the County of Chandos, there were a good number of crops of varieties which experience has shown to be, if not quite unsuitable, at least very erratic yielders in these conditions. For this area of country the following wheats can be recommended:—

Late varieties—Yandilla King, Marshall's No. 3.

Midseason varieties—Ford, Caliph, Leak's Rustproof, President, Canaan.

Early varieties—Late Gluyas, Sultan, Felix, Walker's Wonder.

4. *Overcropping Sand.*

As with most sandy country opened up and settled in this State, the natural scrub is easily killed, and payable cereal crops are obtained while this land is sufficiently well supplied with organic matter to keep it from drifting. Still the time soon arrives when these soils show signs of being overcropped, and they drift badly, not only reducing the chances of making a profit from crops grown on them, but proving a menace to better land in the direction of the drift. This latter stage has been reached with much of the sandy land of the County of Chandos, and the time has arrived when owners of such land should wake up to the fact.

FORMATION OF SANDY SOILS.

In a classification of soils, "sandy soils" can be defined as those soils in which the coarser soil constituents, gravel and sand, predominate. Now these coarse particles have been formed from the splitting up of rocks by mechanical agents, and mainly by moving water, as can be seen at any time in the huge sand dunes on sea coasts, and the masses of sand in rivers. The particles are carried along by the waters, and are sorted out into their various sizes, depending on the pace the water travels. The stones are deposited first, then the gravel, then sand, and, finally, the finer particles—composing the silt—are deposited last. Naturally, these particles are very hard and resistant to disintegration, otherwise they would be split up much finer than we find them, and if left on the spots where deposited, would take very long periods of time—possibly many thousands of years—before they would be in a fit state for cropping; but this rarely happens, for as soon as they are dry winds collect the particles and carry them along until they are finally deposited with the finer rock particles and the organic matter also picked up by the winds.

COMPOSITION OF SANDY SOILS.

It is generally recognised that sandy soils are poor agricultural soils, and the method of their formation is quite sufficient to account for this.

Good agricultural soils must have the following properties:—(1) They must be suitable mediums for plants to anchor for life. (2)

They must allow the roots of plants to penetrate them easily in search of water and food. (3) They must allow water to enter them readily, and move freely in them. (4) They must contain the mineral foods necessary for plants in an available form. (5) They must be of such a consistency that tillage implements can penetrate them at most times of the year without their drifting, on the one hand, or caking on the other. (6) Finally, they must not contain any deleterious substance in sufficient quantity to injure the growth of the plants. Sandy soils fall short of these requirements, wholly due to the method of their formation, in that:—(a) They are not ideally suitable mediums as standing room for plants, because the coarse particles of which they are composed lose their coherence on drying, and the surface particles move about with the wind, so injuring young plants. (b) They as a rule do not contain much available mineral plant food, because of the coarseness of their particles. Mineral plant food to be available to plants must be soluble in the soil moisture, because as far as we now know, it is only in solution that the roots of plants can take in mineral matters, and these soils, being so loose and open, the mineral matters that are soluble wash out of them very readily. Further, in most other soils, mineral matters are always becoming soluble, and so available to plants—in some soils to such an extent that manuring of crops is unnecessary for very long periods of time of continuous cropping—but this takes place but slowly in most sandy soils. Solubility depends on the fineness of the particles—even glass, if very finely ground, is soluble in water, and sandy soils contain only a small proportion of very small particles, and the coarse particles remained comparatively large in the first place, because of their resistance to the natural disintegrating agents. (c) They certainly allow tillage implements to penetrate them easily at most times of the year, but by no means without drifting. This drifting is, like their other faults, accountable to the coarseness of the predominating particles, for when dry their coherence is lost, and the surface moves with every wind of any force. This shifting of the surface is fatal to most crops, because, as can be seen from the above remarks, the effects of the weathering agents on the liberation of plant foods is great, and as these agents do most of their work at the surface, if this surface soil blows away, much available plant food is lost; not only is the plant food lost, but the raw, unsweetened underlayers are what we are forced to try and grow the crops in.

Sandy soils, then, are composed of a preponderance of coarse, resistant particles—giving them bad mechanical condition, because of their liability to drift—and but a comparatively small proportion of fine soil particles and organic matter, making their natural fertility low and their power of recuperation under the natural weathering agents poor.

HANDLING OF SANDY SOILS.

One of the rudiments in the principles of handling soils is that only those soils of very high natural fertility, and with very marked powers of recuperation, are cropped often. This being so, if it is

realised that sandy soils have neither high fertility nor great powers of recuperation, but are the reverse, and are of low natural fertility, and have but poor powers of recuperation when their organic matter is gone, it naturally follows that they should be cropped but seldom. To me, the profitable handling of sandy soils, when the rainfall is fair, can therefore be summed up as, "Crop seldom and stock much," and it then remains to show how and when to crop.

This "cropping seldom" necessarily means that the land must be left out as pasture for comparatively long periods of time, and as the natural growth of herbage is poor, it follows that besides crops that are carted off the land, fodder crops must be grown. For the purpose nothing will compare in our mallee districts, on the sandy soils, with lucerne, and, handled intelligently, the returns secured will be comparatively high, and far surpass those secured from cereal growing. Wimmera rye grass, Italian rye grass, Perennial rye grass, King Island Melilot, Evening Primrose, Sheep's Burnet, Rib grass, Creeping Bent, Subterranean clover, and even Yorkshire Fog will all grow more or less well on such sandy land where the rainfall is sufficient, but not one of these promises to give returns equal to lucerne.

LUCERNE IN ROTATION ON SANDY LAND.

In the soil conditions under review it must be recognised that lucerne as a grazing crop will not remain profitable for as long a period as would be the case in more suitable conditions, and it must be looked upon as a comparatively short-period crop, lasting, perhaps, for four years only, when it should be replaced by something else. To utilise lucerne the following suggested rotations should be quite workable and really profitable:—

(1) (a) Bare fallow, (b) wheat, (c) lucerne, (d) lucerne, (e) lucerne.

(2) (a) Wheat, (b) lucerne, (c) lucerne, (d) lucerne, (e) lucerne.

(3) (a) Lucerne, (b) lucerne, (c) lucerne, (d) cereal hay, (e) rye grass and King Island melilot, (f) rye grass and King Island melilot.

(4) (a) Lucerne (oats in autumn), (b) lucerne (oats in autumn), (c) lucerne (oats in autumn), (d) mixture (rye grass, King Island melilot, sheep's burnet, rib grass, and Subterranean clover), (e) mixture.

HANDLING THE LUCERNE AND MIXTURES.

In the growing and treatment of lucerne as a grazing crop there are a few precautions necessary, but the plant is such an extraordinary hardy one that they are but few. In the first place, the seed of lucerne is so small that it must not be sown deeply, and so the best method of seeding it is to lightly cultivate the land after the preceding crop, broadcast the seed on the surface in the autumn (April), and roll it in, or cover with a brush harrow made by tying some bushes to a piece of timber. As the crop is to be grazed for three or four years, the quantity of seed used to the acre should not be too small, and at

least 6lbs., and, better still, 10lbs. per acre should be used for the best results. When lucerne is preceded by a cereal crop it is sometimes sown with that crop, in which case the cereal should be first drilled in, then immediately broadcast the lucerne seed on the surface, and lightly cover. In some seasons, when seeded with a cereal crop, the young lucerne plants suffer from exposure to the heat, after being protected by the wheat crop until this latter crop reaches maturity, and so better results are secured if the cereal crop is cut for hay. The only weed that checks the growth of lucerne is stinkwort, which starts its growth soon after the wheat crops are harvested, and where this weed is plentiful, better results are secured if stock are turned on the stubbles immediately after harvesting to nip off the young stinkwort plants, rather than by keeping stock off the stubbles to "nurse" the lucerne crop, as is the inclination of some farmers. As all fodder crops suffer from over-feeding, best results are secured from lucerne if livestock are put on it often for short periods of time, rather than being left on it until they eat and tramp out some of the crowns. This latter essential for good results means that much more fencing and better provision for water is necessary than where cereal growing is the main activity of the farm.

In the suggested rotation (3) the seeding of the mixture would be done in the autumn, and would consist of about 8lbs. to 10lbs. of Italian or Wimmera rye grass and 5lbs. to 7lbs. of King Island melilot. The mixture suggested for rotation (4) would be Italian or Wimmera rye grass, 5lbs. per acre; King Island melilot, 5lbs.; sheep's burnet, 1lb.; rib grass, 1lb.; Subterranean clover, 1lb.; and in this rotation the oats sown in the autumn would be used for grazing.

To reduce the work necessary for conducting rotation (4) to a great extent, somewhat similar results should be secured if the sandy land was seeded with the following mixture:—Lucerne, 5lbs. per acre; perennial rye grass, 5lbs.; creeping bent grass, $\frac{1}{2}$ lb.; Yorkshire Fog grass, 1lb.; Subterranean clover, $\frac{1}{2}$ lb.; rib grass, $\frac{1}{2}$ lb.; sheep's burnet, 1lb.; evening primrose, 1lb., and whenever the lucerne stand gets thin in the mixture, sow a little in the autumn.

MANURING THE PASTURES.

Whatever form of cropping-for-livestock is practised, the land should receive phosphatic fertiliser, and in this district and at present ruling prices the equivalent of 1cwt. superphosphate per acre per year should be used.

5. *Bad Weeds.*

Quite a large proportion of the wheat crops seen contained barley, and many also had a fair sprinkling of drake. These are two very bad weeds, for not only do they grow as strongly as do the wheat plants, and so replace some of the crop, but at the same time the presence of barley grain and drake seed in the wheat to be marketed reduces the price that can be obtained. Where land is bare fallowed it is quite a rare occurrence for either barley or drake seed to remain in the soil for 12 months without germinating, and so their

presence in a crop is usually accounted for by the fact that the seeds were sown with the wheat. This trouble can be overcome by only using seed taken from "clean" crops, and, failing this source, grading the seed will remove all drake and considerably reduce the amount of barley. Grading not only reduces the proportion of weed seeds, but it is found to increase the yields of crops very considerably, and is quite a business proposition, costing somewhere about 9d. per bushel to grade (including the difference in price received for wheat that is removed), and can be depended upon to increase the returns by 2bush. to 3bush. per acre on the average.

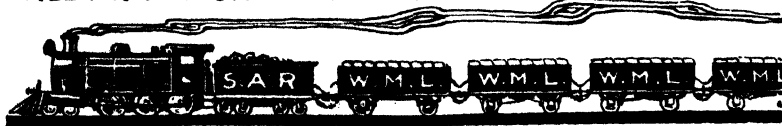
6. *Mixtures of Varieties.*

For seed purposes it is, of course, quite essential that each variety of wheat grown be true to type and, although this does not apply with the same force for ordinary "market" wheat, particularly if the admixture consists of varieties with the same maturing period as the main crop, it is really bad practice to have mixtures of different classes of wheats. It was by no means an uncommon sight to see such "mixed" crops, and quite away from the possibilities of increased money returns from selling the crops as seed, an improvement in yields would follow the taking of more care with the seed to be sown.

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THE POSSIBILITIES BEFORE PEA GROWING IN THE WHEAT AREAS OF SOUTH AUSTRALIA.

[A paper read before the A.A.A.S. by W. S. KELLY (Chairman Advisory Board of Agriculture, South Australia)].

THE NEED FOR SUITABLE ROTATION CROPS.

The need for the adoption of rotation cropping is felt very generally throughout the wheat areas of South Australia. The land in our more reliable districts is too valuable for us to be satisfied with one crop in two years as the maximum of our production. If we continue the practice of bare fallow and wheat we must ultimately denude our soils of humus. At the same time stock-carrying capacity will remain much too low. Probably bare fallow will long continue to be used in this State, but we need some form of rotation to be used in conjunction with this practice.

A large number of rotations have been tried in the past. These can be conveniently grouped in accordance with the frequency that wheat finds a place in the rotation. In the one group wheat is once in four, five, or six years, while in the other it is sown every second or third year.

Rotations which fall under the former group are such as—

- (1) Fallow, wheat, oats, then rye grass or clover for two or three years, then back to fallow and wheat again.
- (2) Fallow, wheat, oats, lucerne for three or four years.

These are but two of many excellent rotations which have a very strong appeal to the farmer to-day. These rotations possess many advantages. Labor is very much reduced, and at the same time the stock-carrying capacity of the farm is very much increased. This class of rotation is particularly suitable for the man on country of good rainfall, but either distant from the market or of a rough and hilly nature. Rough arable land can to-day be worked much more profitably as improved pasture.

There are, however, many districts in which these rotations will not prove the most satisfactory. The districts that have proved most profitable for wheat and hay are now so expensive that it would appear that only successful and almost continuous cropping can make the working of the land profitable. This is more particularly true when the land is in small holdings on which the farmer can do most of his own work, and already has plant enough to work the whole of his property adequately. In this case it will probably pay the farmer, while he grows fodder, not to neglect wheat. For, after all, it has been successful wheat growing that has made our land as valuable as it is at present. Moreover it seems to me wise not to think too much on costs of production, nor to scan too anxiously the horizon for indications of the price our staple products are likely

to be in a year or so hence. Only one thing seems certain, and that is, that the world needs wheat, and that we can produce it as cheaply as anywhere in the world, and therefore it is but reasonable to assume that the price will repay our efforts. In seeking for a rotation suitable for our most valuable lands, we must choose one, therefore, that will enable us to grow wheat or hay every second or third year.

The rotation of peas with wheat readily fills the above requirements. Peas, being a legume, enrich rather than impoverish the soil. If the rainfall is adequate, wheat will follow peas with success. In fact, wheat and peas may successfully follow each other for quite a long period without a break, provided the land does not contain over much weeds. The writer has the fifth successive crop now growing; the paddock has had wheat three times and peas twice. All the crops have been successful. Most of the wheat has been cut for hay, and has averaged over two tons; the pea crop has averaged between six and seven bags per acre. This, of course, is very intense culture in comparison with most South Australian practices.

It may not be wise to crop the same paddock so continuously. The tendency is to allow the weeds to become too thick. This can be counteracted by cutting the wheat crop for hay. If this were consistently done, and the land well worked, many small farmers could have the bulk of their lands under crop every year, without any depreciation of the soil.

Another rotation used in connection with peas is fallow, wheat, peas, grazing. This gives two crops in four years. The advantage of this rotation is that there is not the difficulty of cleaning up the pea stubble, and at the same time the tendency to dirty the field is counteracted. The growth of the fodder after the peas is usually very heavy. Still this method has the disadvantage of only growing one wheat crop in four years. Moreover, it necessitates the making of bare fallow before the wheat, while it is proved that peas can successfully take the place of bare fallow.

Another rotation is peas, wheat, grazing. This gives two crops in three years. The land will require heavy grazing during the year it is not cropped to check weeds from seeding.

Few farmers will be tied up to any of these rotations. They will act as circumstances demand. They will be very unlikely to drop bare fallow altogether. Fully half the wheat should follow bare fallow. If half the wheat follows peas, they will naturally vary the paddocks on which they will sow the peas, so that the paddock that carried peas before wheat in one rotation will be fallowed before wheat the next.

THE VALUE OF THE PEA CROP.

The value of the pea crop naturally depends largely on the yield. It is difficult to say with any certainty what may reasonably be expected in our 18in. to 22in. rainfall areas. Peas have been grown on a small scale throughout the Middle North for a number of years. But as the cost of harvesting was previously very heavy, most of

the peas were fed to sheep. It is only relatively lately that the crops have been harvested. Certainly the hills districts have been growing and harvesting for a great many years. Here the crops seem to be dependable, and the yields vary from 20bush. to 40bush. Speaking generally, the Middle North will not average so well. The crop is susceptible to hot winds, and every now and again the yields will be seriously affected.

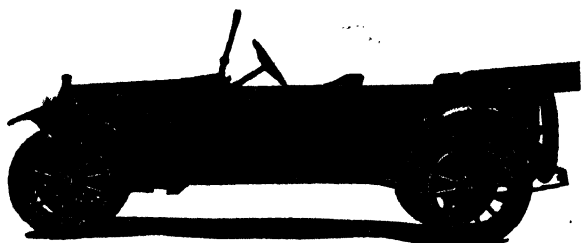
Basing our estimates on the few years that we have harvested peas, I should say that one might reasonably expect as many bushels of peas as of wheat, if grown on land of from 18in. to 22in. rainfall. Which means that in the favored wheat areas we should grow from 15bush. to 30bush. of peas per acre.

In order to see what this means let us suppose a farm of, say, one square mile, 500 acres of which is arable. Assume 100 acres to wheat after fallow, 100 acres to wheat after peas, 100 acres to peas, 50 acres to barley or oats for grain, 50 acres to barley or oats for grazing, 100 acres for bare fallow. This will make 350 acres to be harvested each year.

Let us assume that 400 breeding ewes are being kept on the property. This will mean from 330 to 400 lambs to be fattened off each year. Probably it will not be wise to harvest all the peas. Suppose 20 acres were fenced off, and a proportion of the lambs, say, 250, topped off on this area. If the lambs are in forward condition, 20 acres of normal crop should fatten off from 200 to 300 lambs. This will leave 80 acres to be harvested. Assume that this yields seven bags per acre. This will produce 560 bags. Practically 500 bags will be left over, after seed for the 100 acres to be sown has been reserved.

It is not to be assumed that a ready market will be found for peas as their growth on a larger scale is adopted. But the feeding value of the peas is beyond dispute. Peas show a content of almost 20 per cent. digestible albuminoids. Now oats vary from 8 per cent. to 10 per cent. A bag of peas weighs 180lbs., while a bag of oats weighs only 120lbs., so that on their albuminoid ratio 500 bags of peas are worth 1,500 bags of oats. Of course, under starvation conditions the carbo-hydrates become important, and then the difference in the relative feeding value between oats and peas would not be so great. But under normal circumstances the animal can obtain sufficiency of roughage to extract all the carbo-hydrates and fats required. Then the requirement is to build up the shortage in albuminoids with concentrates, and these concentrates are valued in proportion as they supply the essential nitrogen. On this basis a bag of peas is worth three times as much as a bag of oats.

We have not yet learned to realise what value lies in 500 bags of rich fodder to be used as required on a farm. If the pastures are running out, $\frac{1}{2}$ lb. to 1lb. per day will keep the ewe flock in condition. If feed is short at lambing time, 2lbs. to supplement the grazing will cause the ewes to milk well. The peas are very readily fed to sheep. While the weather is dry they need only be scattered on the ground.



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Cows will milk well on a ration of crushed peas. Horses will work well on 6lbs. of crushed peas with their chaff. Peas are recognised by all to be an excellent ration for pigs. Young pigs become independent of milk relatively early if fed on peas.

ESSENTIAL CONDITIONS.

Certain conditions seem to be essential for the successful growing of peas. The crop is precarious when grown under an 18in. rainfall. Heavy frosts are a danger. If frosts are not severe the peas can be sown earlier, in which case a lighter rainfall may suffice. Peas will thrive much better on friable soil than on hard-setting soil.

Peas require but reasonably good cultural methods. The land should be summer fallowed for preference, worked down with the first rains, and worked over thoroughly immediately before seeding. This is essential, for weeds are the enemies of peas. Sow the peas as soon as possible after the wheat is in. In our district, with a 20in. rainfall, we like to have the peas sown in June. It is better to risk the frosts rather than the hot winds. It is essential to overcome the weeds, for if the peas come up cleanly there is every chance both of a good pea crop and also of a good following crop of wheat. Many crops that have shown up poorly after a supposed pea crop, are a failure because they follow a healthy growth of weeds rather than of peas.

HARVESTING METHODS.

Harvesting peas is now a simple matter. Thanks to the ingenuity of our manufacturers, we now have header-threshers that will reap peas almost as successfully as they will reap wheat. This is an immense advantage. The old harvesting methods were expensive and tiresome. Now one man on a header can reap and clean from 50 bags to 100 bags per day.

Some may still prefer to feed the peas direct to the sheep. In such cases it is wise to begin feeding earlier than is generally done. Turn the sheep in as soon as the peas are fully matured. There is no virtue in the drying process. But there is always an element of risk in feeding off large areas. Should a rain fall after the peas have been tramped out then there must be heavy loss. Feed a portion early, and reserve the bulk for hand feeding; seems to be the wiser way.

IMPORTANCE OF MOISTURE.

It will be seen that I have assumed that the wheat crop after peas will, on a 20in. rainfall, be satisfactory. Many will grant this point; others will contest it. The danger to the wheat crop following peas is the lack of moisture. The land cannot be worked through the spring or the summer, so that it is but natural to assume that a considerable quantity of moisture is lost because of the lack of the mulch. Also that a quantity is used by the pea crop. Against this it may be urged that the growth of peas will itself act as a mulch during the summer months. Even after a crop is reaped a large amount of straw will be found almost covering the surface. I have frequently noticed how damp is the ground immediately under this covering. Still it is,

I think, a fact that the subsequent crop may suffer if the following season is a dry one. For this reason I doubt if it will pay to grow peas in rotation with wheat under an 18in. rainfall. Our experience has been that the following crops have been satisfactory over a period of 10 years. We expect the loss of a bag or so to the acre during a dry year, while some of the best crops we have grown have followed peas in years of heavy rainfall.

Much depends, first, on the cleanness of the pea crop, and, secondly, on the preparation of the soil before the wheat is sown. The pea paddock will need to be heavily stocked immediately after the peas are reaped. This will do much towards clearing the land. At an early date in the autumn the land should be fire harrowed, so that the paddock is quite clear before the first rain. Immediately after the rain the field should be worked over lightly; a second working should be given just before seeding is commenced. We find that it pays us to sow this paddock last, using the earliest variety of wheat. This gives one a chance to kill the weeds and also to solidify the land.

CONCLUSION.

Pea growing offers no royal road to success. It demands work, and the man who wants to find the easiest way will be well advised to try other methods. It is not suitable for many conditions; good rainfall and good soil are essential. But much of our agricultural areas offer these conditions. Pea growing certainly does offer the man on a limited area of good country an opportunity to use his holding to the full. Its adoption would make the keeping of considerable numbers of stock possible on quite small farms. It would place stock raising on a much sounder basis than it is at present on many properties. If the farmers learn to grow peas, fat lambs or heavy yielding cows will assuredly follow. At the same time our wheat production should not suffer.

THE AGRICULTURAL OUTLOOK.

REPORT FOR THE MONTH OF JANUARY, 1925.

The following report on the general Agricultural condition and outlook of the area represented by the Government Experimental Farm mentioned below has been prepared by the Manager:—

Kybybolite.—Weather has been comparatively fine, and fairly typical for the month. Two light rains were recorded, registering about the average for January. Several cold snaps have been experienced, and only a few days of really hot weather. Crops—Most cereal harvesting has been completed, and some really good yields have been recorded. The general returns will be much above the average. Harvesting clover seed is in full swing. This also promises a splendid yield. Summer crops under irrigation are growing well, and are much quicker than usual in growth. Natural feed—Stubble feed is plentiful.

AGRICULTURAL MACHINERY.

FIELD TRIAL AT PASKEVILLE.

Since its establishment in 1893 many successful trials of agricultural implements and machinery have been conducted by the Northern Yorke's Peninsula Agricultural Bureau Field Trial and Show Society. This society consists of an amalgamation of Branches of the Agricultural Bureau situated at Maitland, Moonta, Bute, Paskeville, Kadina, Nantawarra, and Artherton, one delegate from each forming a committee of management. In 1900 the Government presented to the society an area of 120 acres of land alongside the railway line, and at a distance of about two miles from the township of Paskeville. On this, on Thursday, January 22nd, a crowd, estimated at between 4,000 and 5,000 farmers, gathered for the purpose of witnessing a trial of various wheat and pea harvesting machines. Forty acres had been sown to Belgian Wonder wheat, and was carrying a good crop. Approximately three acres had been put under peas, and this, likewise, was quite satisfactory from the point of view of enabling visitors to judge the efficiency of the pea-gathering machines.

The weather conditions were not ideal from the point of view of comfort, but they certainly added to the value of the trial by making the work of the machinery somewhat more difficult than would have been the case on a more normal harvesting day.

MACHINERY.

The types of machines which took part in the trial were as follows:—C.A.S.E., 16ft. thresher, drawn by a C.A.S.E. tractor; International Harvester Company, 12ft. thresher, drawn by 1-15-30 McCormick-During tractor; Horwood, Bagshaw, Limited, reaper-thresher, drawn by Ronaldson-Tippett, 18-33 super-drive tractor; H. V. McKay Proprietary, Limited, 8ft. header and 8ft. Sun header, drawn by Holt tractors; H. V. McKay Special Sun harvester, drawn by horses; May Brothers & Jones, Limited, reaper-thresher, drawn by British Wallis tractor, and 7ft. harvester, drawn by Fordson tractor; Clutterbuck Brothers, Massey-Harris thresher, drawn by Peter-bro' tractor; David Shearer, Limited, 8ft. harvester, drawn by horses; C. H. Smith, Limited, 8ft. Massey-Harris thresher and two Massey harvesters, drawn by Twin City tractors; South Australian Farmers' Co-operative Union, Federal header, drawn by horses; Adelaide Motors, Sun header, drawn by Fiat tractor; Kelly's Universal Tractor and Motor Agency, Big E harvester, drawn by Moline tractor; H. V. McKay, pea header; and International Harvester Company, the latter drawn by McCormick tractor. There were also on show by the International Harvester Company a Dunham Culti-packer, for cultivating purposes, Stevens' patent axle greaser, Hannaford's wheat pickler, Acme waterproof seed drill box cover, and other implements.

OFFICIAL LUNCHEON.

Mr. J. P. Pontifex, J.P. (President of the Society for the past nine years), presided over a representative gathering at luncheon. The guests included Messrs. A. Goodall (ex-President of the Society), E. J. Pearce (President of the Whyte-Yarcowie Agricultural Bureau Field Trial Society), Tossell, M.P., Allen, M.P., the Mayor of Kadina (Dr. C. E. C. Wilson), the Chairman of the district council of Kadina (Cr. A. Rodda), W. O. Eime (President of the Blyth Agricultural Bureau), T. R. Brinkworth and J. M. McDonald (trustees of the South Australian Voluntary Wheat Pool), and representatives from kindred societies from the South-East to the Lower North, Professor A. J. Perkins (Director of Agriculture), Mr. W. J. Spafford (Chief Agricultural Instructor), and Mr. H. J. Finnis (Secretary to the Advisory Board).

GENERAL SATISFACTION.

Apart from the unpleasant nature of the weather, everything connected with the field trial was generally commented on as being most satisfactory. The President (Mr. Pontifex) was ably assisted by the General Secretary of the Society (Mr. E. E. Simon, Bute), the Secretary of the Paskeville Branch of the Bureau (Mr. J. Prowse), which body was responsible for local arrangements, the Vice-President of the Society (Mr. J. C. Price), and the Treasurer (Mr. W. H. Sharman, Bute).

A noteworthy feature was the distance which some of the spectators travelled. There were present farmers from Lameroo, Blyth, Yarcowie, Eyre Peninsula, and the Hills district, which gives some indication of the importance which is attached to gatherings of this nature.

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ORCHARD NOTES FOR SOUTHERN DISTRICTS FOR FEBRUARY, 1925.

[By C. H. BEAUMONT, Orchard Instructor and Inspector.]

I have been among the harvesters of apricots, plums, and peaches the past few weeks; I have heard their complaints of poor prices and lack of demand. In many instances the surprise is that a purchaser can be found at all; fruit dead ripe, fruit firm, and fruit green and immature were thrown into the box together. The box was on the ground, and the fruit was thrown from the picker's hand as he stood by the tree, the owner's method being copied by the other pickers. When I tried to demonstrate the advantage of careful handling by using a picking bag, and keeping the ripe fruit separate, I was told that "the stuff has to come off quick and lively; it won't pay to lose time making several grades;" yet I knew that where care was taken the price realised was four to five times greater. It pays to send in a good sample and create a demand for extra quantities. The soft fruits will be almost at an end for this year, and apples and pears for export or for home use will commence; we cannot take too much care in the packing and grading. There is a shortage of apples, and greater care should be exercised, or imports will crowd out our inferior packs.

Later, apples and pears should have a protecting coat of arsenate of lead to lessen risk of damage.

Woolly aphis may be checked if the weather sets in very hot, but if it keeps cool some black leaf 40 will be necessary.

Scale insects on citrus and other trees will need special attention; they are very lively, and breeding fast. Fumigate or spray.

Young trees of all varieties, and citrus generally, will need water unless it rains. Keep citrus trees off the ground. Loosen soil as soon as possible after irrigation.

Do not forget to mark trees which are showing better qualities than usual if you want good working wood later. Attend to budded stocks.

Vines still need to be watched for oidium and downy mildew. Where the foliage is very dense it may be necessary to take off the tops to let through light and air.

DAIRY AND FARM PRODUCE MARKETS.

A. W. Sandford & Co., Limited, reported on January 31st, 1925:—

BUTTER.—During the month under review several fluctuations in values with all grades of butter have occurred, due mostly to the depressed feeling on the London market. With top grades the market has made one or two advances owing to the hot weather, which has had the effect of cutting off supplies of this quality; but the lower grades did not make the corresponding advances, as there is a big surplus, the only outlet being sales to overseas buyers. The trade locally has been very brisk, especially for the private consignments of separators and dairies and stores and collectors' lines. At the end of the month the following values ruled:—Choicest factory and creamery fresh butter, in bulk, 1s. 3½d., prints ¾d. extra; first grade, bulk, 1s. 0½d.; second and third grade, bulk, 10½d. to 11d.; best separators and dairies, 1s. 1d. to 1s. 3d.; fair quality, 10½d. to 1s. 0½d.; good conditioned store and collectors', 9½d. to 11d.; heated lots down to 8½d. per lb.

EGGS.—Although the local buyers have been operating extensively for supplies, and interstate buyers have also been purchasing on this market, heavy quantities arriving, coupled with the inferior quality of many of the consignments, were responsible for an easing in values, the present price for fresh hen being 10d.; duck, 11d. per dozen.

CHEESE.—For some weeks past the local buyers have been purchasing freely for new makes, whilst good interstate trade has been done with Western Australia, purchases going forward by rail, and as stocks have been kept cleared, the market recorded an advance of ½d. per lb., new makes realising from 7½d. to 8½d. per lb. for large to loaf; semi-matured and matured values being unaltered at 10d. to 11d. per lb. for large and medium sizes.

HONEY.—The export trade has been at a standstill owing to the lack of shipping accommodation, but it is expected that buyers will again be operating when steamers commence taking cargo. Locally the demand has been slow, the only sales being made with the lower grades, composed mostly of old season's honey. Prime clear extracted, in liquid condition, 3½d. to 4d.; best quality candied lots, 3½d. to 3¾d.; lower grades down to 2d.; beeswax readily saleable at 1s. 4d. to 1s. 4½d.

ALMONDS.—During the early part of the month stocks of all classes of almonds in shell were accumulating, but the reduction of ½d. per lb. brought about better demand, and good clearances were effected. With kernels the quantities coming to hand are increasing, but they are by no means equal to the trade's requirements, and high prices continue to rule. Brandis, 8½d. to 9d.; mixed softshells, 7½d. to 8d.; hardshells, 4d.; kernels, 2s. 1d. to 2s. 1½d.

BACON.—Rather unexpectedly supplies of sides and hams became exhausted after the Christmas demand, and the trade has experienced great difficulty in securing its wants—in fact, with hams, the position was relieved towards the end of the month by heavy importations from Victoria. Owing to the shortage of sides, better attention has been paid to rolls and middles, stocks of which are ample. Best local hams, 1s. 8d.; best factory cured sides, 1s. 3½d. to 1s. 4d.; best factory cured middles, 1s. 5d. to 1s. 5½d.; Hutton's "Pineapple" sides, 1s. 3d.; Hutton's "Pineapple" middles, 1s. 7d.; Hutton's "Pineapple" rolls, 1s. 3d.; Hutton's "Pineapple" hams, 1s. 8d. to 1s. 9d.

LARD.—Selling freely; Hutton's "Pineapple" brand, in packets, 9d.; in bulk, 8d. per lb.

LIVE POULTRY.—Supplies were short for the first few sales of this month, but as a result of the continued high price of wheat, buyers were anxious to clear stocks, and heavy quantities were marketed. Unfortunately, the condition of most lines is not satisfactory, and fairly low prices have to be accepted to effect clearances with the off-conditioned consignments—the majority of these being White Leghorn hens. However, buyers are operating keenly for anything fit to kill, and remunerative rates were secured. Crates obtainable on application. The following rates ruled at our last auction:—Prime roosters, 4s. 6d. to 6s. 6d.; nice-conditioned cockerels, 3s. to 4s. 3d.; fair-conditioned cockerels, 2s. 3d. to 2s. 9d.; plump hens, 3s. to 4s. 6d.; medium hens, 2s. to 2s. 9d.; light hens, 1s. 6d. to 1s. 11d.; geese, 4s. 6d. to 6s.; ducks, good conditioned, 4s. 6d. to 6s.; ducks, fair conditioned, 2s. to 3s. 6d.; ducks, light conditioned, lower; turkeys, good to prime condition, 1s. 1d. to 1s. 6d. per lb., live weight; turkeys, fair conditioned, 11d. to 1s. 0½d. per lb. live weight; turkeys, fattening sorts, lower; pigeons, 6d. each.

POTATOES.—Prime new potatoes, at 7s. to 9s. 6d. per cwt., on rail.

ONIONS.—Best new white onions, at 9s. to 9s. 6d. per cwt., on rail.

NARRUNG HERD TESTING ASSOCIATION.

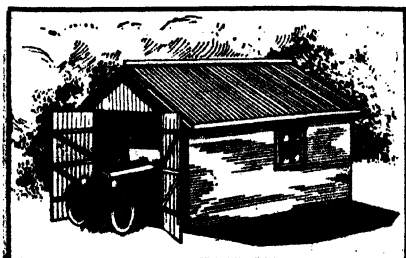
RESULTS OF BUTTERFAT TESTS FOR NOVEMBER, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during November.	Per Cow during November.	Per Cow October to November.	Per Herd during November.	Per Cow during November.	Per Cow October to November.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
5/A	73.10	60.67	27,826	380.66	807.04	1,344.33	18.39	36.92
5/B	29	27.83	17,212.5	593.53	1,206.04	860.84	29.68	59.45
5/C	18	18	12,255	680.83	1,592.75	556.83	30.94	71.30
5/D	40	34.33	15,510	387.75	935.61	795.40	19.89	47.08
5/E	56	50.03	27,221	486.09	1,190.35	1,302.77	23.26	54.24
5/F	25.4	25.03	16,398.5	645.61	1,425.55	712.55	28.05	61.74
5/G	20.77	20.07	12,755.5	614.13	1,234.70	564.24	27.17	54.38
5/H	36	25.93	11,859	329.42	736.77	635.40	17.65	37.81
5/I	37	33.17	19,248	520.22	1,166.17	851.62	23.02	51.43
5/J	42	37.73	16,524	393.44	893.08	811.08	19.31	42.02
5/K	47.4	44.7	23,731	511.78	1,057.38	1,125.98	24.24	48.12
5/L	34	34	16,755	492.79	1,121.88	807.03	23.74	49.60
5/M	23	21.07	10,332	449.22	973.52	514.47	22.37	45.87
5/N	29.07	26.17	17,768.5	611.23	1,341.42	758.96	26.11	58.71
5/O	41.97	36.93	20,713.5	493.53	1,029.25	919.28	21.90	45.60
5/P	36	36	18,075	502.08	1,133.51	835.74	23.22	54.71
5/Q	30	27	17,460	582.00	1,120.37	854.04	28.47	55.06
5/R	69.93	57.3	22,957	328.28	609.08	1,048.18	14.99	27.24
5/S	36.97	34.97	18,315	495.40	—	813.35	22.00	—
Means	38.19	34.26	18,048.24	472.69	1,022.97	848.00	22.20	47.11

NARRUNG HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR DECEMBER, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during December.	Per Cow during December.	Per Cow October to December.	Per Herd during December.	Per Cow during December.	Per Cow October to December.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
5/A	74.97	64.97	24,953	332.84	1,139.88	1,232.37	16.44	53.36
5/B	29.1	23.9	14,482	497.66	1,703.70	742.02	25.50	84.95
5/C	18	18	11,268.5	626.03	2,218.78	528.13	29.34	100.64
5/D	40	30.52	9,003	225.08	1,160.69	511.35	12.78	59.86
5/E	56	44.87	24,756	442.07	1,632.42	1,210.36	21.61	75.85
5/F	26.9	26.9	19,805	736.24	2,161.79	858.15	31.90	93.64
5/G	23	22.48	12,328	536.00	1,770.70	588.07	25.57	79.95
5/H	38	29.77	10,711	253.52	990.29	622.47	14.91	52.72
5/I	36.06	28.19	13,643.5	378.35	1,544.52	632.26	17.53	68.96
5/J	43.65	30.45	12,540.5	287.30	1,180.38	613.14	14.05	56.07
5/K	47	37	17,800	378.72	1,436.10	867.19	18.45	66.57
5/L	34.16	34.16	15,732.5	460.57	1,582.45	727.89	21.31	70.91
5/M	23	21	10,741.5	467.02	1,440.54	501.75	21.82	67.69
5/N	31	29.71	21,357.5	688.95	2,030.37	993.86	32.06	90.77
5/O	41.29	36.10	19,656	476.05	1,505.30	835.35	20.23	65.83
5/P	36	34.39	15,773	438.14	1,571.65	772.60	21.46	76.17
5/Q	30	24.94	12,568.5	418.95	1,539.32	643.18	21.44	76.50
5/R	83.9	67.65	25,451	303.35	912.43	1,212.30	14.45	41.69
5/S	36	33.58	13,909.5	386.38	881.78	660.30	18.34	40.34
Means	39.37	33.61	16,130.53	409.72	1,428.59	776.46	19.72	66.68



THE MODEL GARAGE

Supplied in any size or design. If desired, materials can be framed and marked ready for erection.

ESTIMATES FREE ON APPLICATION.

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Victoria Square, Adelaide. — Parade, Norwood. — Port Adelaide.

MOUNT GAMBIER AND DISTRICT HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR DECEMBER, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during December.	Per Cow during December.	Per Cow August to December.	Per Herd during December.	Per Cow during December.	Per Cow August to December.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
2/K	27	21.42	20,687	761.13	2,928.12	880.28	32.38	121.96
2/L	23	20.55	14,120	613.91	2,867.53	638.84	27.78	126.16
2/Y	13	12.35	9,833	756.38	1,226.55	388.11	29.85	171.02
2/D _D	19.68	19.68	16,525	839.68	4,627.06	708.92	36.02	199.77
2/E _E	14.32	13.87	9,750.5	680.89	4,083.04	407.80	28.48	178.71
2/F _F	11	11	10,633	966.64	4,807.74	402.10	36.55	199.41
2/G _G	12	10.71	6,853.5	571.12	3,321.24	281.45	23.45	135.41
2/H _H	10	10	7,796.5	779.65	4,307.37	324.83	32.48	168.39
2/I _I	11	11	8,742	794.72	4,396.18	386.95	35.18	188.24
2/J _J	28.58	27.42	16,657	582.82	2,490.61	633.98	22.18	94.99
Means	16.96	15.80	12,159.75	717.05	3,505.39	505.33	29.80	145.27

THE BEST FRUIT

Can only be obtained from Healthy, Thrifty Trees.

TREES FROM THE

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Are bearing heavy crops of first quality fruit in leading fruit-growing centres throughout the Commonwealth.

QUALITY IS MORE THAN A SLOGAN WITH US—IT IS THE KEYSTONE OF OUR BUSINESS

INQUIRIES SOLICITED.

H. N. WICKS, Proprietor.

POSTAL ADDRESS—BALHANNAH, S.A.

GLENCOE HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR DECEMBER, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during December.	Per Cow during December.	Per Cow October to December.	Per Herd during December.	Per Cow during December.	Per Cow October to December.
3/A	17	17	17,127.5	1,007.50	3,124.18	716.59	42.15	123.70
3/B	13.16	12.32	9,673	735.03	1,607.40	405.55	30.82	65.11
3/C	12	12	10,276.5	856.38	2,968.09	406.73	33.89	110.77
3/D	12	10.61	10,282.5	856.87	2,240.69	360.67	30.06	79.83
3/E	12.94	12.1	11,488	887.79	2,523.64	516.27	39.90	104.22
3/F	12	12	9,036.5	753.04	2,517.66	371.71	30.98	99.91
3/G	14.29	12.81	10,775	754.02	2,044.27	408.28	28.57	72.94
3/I	13	11	9,718.5	747.58	2,553.45	411.64	31.66	102.09
3/J	21	20	13,438.5	639.93	1,881.37	528.20	25.15	72.27
3/K	24.87	18.87	15,014.5	603.72	2,001.15	645.90	25.97	82.50
3/L	24	19.35	11,944	497.66	1,812.45	540.38	22.52	74.75
3/M	12	11.39	7,134	594.50	1,892.42	308.91	25.74	76.67
3/N	23	21.13	17,485	761.47	2,174.37	728.77	31.74	87.54
3/O	17	15.68	11,632	684.23	1,874.61	482.65	28.39	72.26
3/P	18.74	17.26	13,582.5	724.79	2,211.91	532.35	28.41	83.13
3/Q	37.32	30.58	22,613	605.92	1,892.25	927.30	24.85	76.45
3/R	17	16.39	12,622	742.47	2,735.16	592.32	34.84	122.95
3/T	21	20	16,275	775.00	2,991.90	668.42	31.83	124.30
3/U	23	20.39	15,316.5	665.93	1,882.49	664.08	28.87	72.77
3/V	17	15.65	11,668	687.59	1,816.17	472.69	27.86	72.09
Means	18.12	16.33	12,855.13	709.60	2,194.85	534.47	29.50	87.69

APPOINT THE— EXECUTOR TRUSTEE AND AGENCY COMPANY

OF SOUTH AUSTRALIA, LIMITED.

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Manager.. CHARLES GRIEVE.
.. E. W. WILLIAMSON.

22, GRENFELL STREET - - ADELAIDE.

IMPORTS AND EXPORTS OF FRUITS, PLANTS, ETC., DECEMBER, 1924.

IMPORTS.

Interstate.

Apples (bushels)	392
Apricots (bushels)	2
Bananas (bushels)	11,915
Mangoes (bushels)	1
Oranges (bushels)	3
Passion fruit (bushels)	27
Peaches (bushels)	2
Pineapples (bushels)	304
Plums (bushels)	1
Strawberries (packages)	2
Cucumbers (packages)	30
Potatoes (packages)	3,554
Bulbs (packages)	48
Plants (packages)	38
Seeds (packages)	21
Wine casks (empty)	3,739

Fumigated—75 wine casks.

Rejected—36bush. bananas, 1bush. mangoes, 1bush. peaches, 6bush. pineapples, 25 packages cucumbers, and 214 second-hand cases.

Overseas.

Federal Quarantine Act.

Seeds, &c. (packages)	8,173
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EXPORTS.

Federal Commerce Act.

Two hundred and seventy packages citrus fruit, 20 packages other fresh fruit, 3,717 packages dried fruit, and 3 packages plants were exported to overseas markets. These were consigned as follows:—

London.

Dried fruit	711
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New Zealand.

Dried fruit	1,703
Citrus fruit	270
Cucumbers	20

India and East.

Dried fruit	98
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South Africa.

Dried fruit	855
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Vancouver.

Dried fruit	350
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Mauritius.

Plants	3
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RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of, and to the end of January, 1925, also the average precipitation to the end of January, and the average annual rainfall.

Station.	For Jan., 1925.	Av. end Jan., 1925.	Av'ge. Annual Rainfall	Station.	For Jan., 1925.	Av. end Jan., 1925.	Av'ge. Annual Rainfall
FAR NORTH AND UPPER NORTH.				LOWER NORTH—continued.			
Oodnadatta	0.93	0.87	4.96	Gulnare	1.15	0.67	19.48
Marree	0.59	0.44	6.03	Yacka	0.59	0.51	15.56
Farina	0.81	0.55	6.66	Koolunga	1.33	0.61	15.95
Copley	0.34	0.63	8.35	Snowtown	0.23	0.61	16.09
Beltna	2.76	0.70	8.95	Brinkworth	1.30	0.50	16.39
Blinman	1.02	1.00	12.51	Blyth	0.69	0.68	17.07
Taroona	0.59	0.36	7.64	Clare	1.00	0.86	24.80
Hookina	0.40	0.64	13.29	Mintaro	0.94	0.59	23.86
Hawker	0.88	0.63	12.94	Watervale	0.69	0.90	27.64
Wilson	0.54	0.68	12.63	Auburn	0.74	0.99	24.41
Gordon	1.29	0.71	11.52	Hoyleton	0.69	0.75	17.91
Quorn	0.45	0.72	14.26	Balaklava	0.91	0.70	15.98
Port Augusta	0.22	0.56	9.68	Port Wakefield	0.24	0.57	13.28
Port Augusta West	0.25	0.53	9.70	Terowie	1.83	0.70	13.82
Bruce	0.31	0.52	10.79	Yarowie	0.83	0.71	14.19
Hammond	0.48	0.67	12.02	Hallett	0.99	0.70	16.53
Wilmington	0.33	0.88	18.41	Mount Bryan	0.89	0.51	17.13
Willowie	0.33	0.53	12.79	Burra	0.61	0.75	18.14
Melrose	0.36	1.24	23.53	Farrell's Flat	0.90	0.72	19.09
Booleroo Centre	0.44	0.82	15.82	Owen	0.51	—	—
Port Germein	0.29	0.67	12.90	WEST OF MURRAY RANGE.			
Wirrabara	0.58	0.71	19.85	Manoora	0.73	0.57	19.12
Appila	0.97	0.66	15.05	Saddleworth	0.36	0.76	19.89
Craddock	0.83	0.64	11.53	Marrabel	0.31	0.72	20.00
Carrieton	0.87	0.83	12.95	Riverton	0.31	0.78	20.97
Johnburg	1.25	0.62	10.99	Tarlee	0.42	0.78	18.18
Eurelia	1.41	0.81	13.62	Stockport	0.51	0.78	16.89
Orroroo	0.74	1.03	13.73	Hamley Bridge	0.58	0.81	16.82
Nackara	1.46	0.71	11.85	Kapunda	0.97	0.84	20.04
Black Rock	0.96	0.74	12.83	Freeling	0.51	0.77	18.19
Ucolta	1.30	0.73	11.91	Greenock	0.66	0.79	21.93
Peterborough	1.49	0.83	13.60	Truro	0.55	0.72	20.43
Yongala	1.67	0.67	14.73	Stockwell	0.73	0.71	20.58
LOWER NORTH-EAST.				Nuriootpa	0.49	0.78	21.17
Yunta	0.38	0.68	8.79	Angaston	0.68	0.78	22.71
Waukaringa	0.82	0.55	8.47	Tanunda	0.52	0.84	22.40
Mannahill	0.92	0.71	8.62	Lyndoch	0.35	0.76	23.41
Cookburn	1.08	0.65	8.29	Williamstown	0.52	0.90	27.75
Broken Hill, N.S.W.	1.87	0.69	9.99	ADELAIDE PLAINS.			
LOWER NORTH.				Mallala	0.22	0.74	16.92
Port Pirie	0.30	0.64	13.58	Roseworthy	0.22	0.74	17.59
Port Broughton	0.26	0.61	14.33	Gawler	0.60	0.72	19.24
Bute	0.31	0.62	15.90	Two Wells	0.15	0.70	16.03
Laura	1.20	0.72	18.34	Virginia	0.17	0.72	17.51
Caltowie	1.20	0.69	17.27	Smithfield	0.23	0.52	17.62
Jamestown	1.12	0.67	18.04	Salisbury	0.25	0.74	18.75
Gladstone	0.64	0.67	16.42	North Adelaide	0.32	0.82	22.66
Cryстал Brook	0.44	0.68	16.00	Adelaide	0.40	0.73	21.18
Georgetown	0.87	0.68	18.64	Glenelg	0.08	0.65	18.63
Narridy	0.59	0.58	16.36	Brighton	0.09	0.65	21.60
Redhill	0.52	0.61	17.38	Mitcham	0.50	0.89	24.54
Spalding	1.01	0.61	20.24	Glen Osmond	0.56	1.00	26.34
				Magill	0.47	0.88	25.81

RAINFALL.—continued.

Station.	For Jan., 1925.	Av. end Jan., 1925.	Av'ge Annual Rainfall	Station.	For Jan., 1925.	Av. end Jan., 1925.	Av'ge Annual Rainfall
MOUNT LOFTY RANGES.				WEST OF SPENCER'S GULF—continued.			
Teatree Gully.....	0.66	0.86	28.32	Duke's Peak.....	0.60	0.71	16.43
Stirling West.....	1.12	1.56	47.30	Kimba.....	0.17	0.77	15.85
Uraidla.....	0.91	1.38	44.79	Wudinna.....	0.69	—	—
Clarendon.....	0.82	1.14	33.29	Minnipa.....	0.35	0.96	15.32
Morphett Vale....	0.68	0.81	23.07	Tumby.....	0.75	0.30	14.62
Noarlunga.....	0.43	0.64	20.56	Carrow.....	—	0.39	14.31
Willunga.....	1.09	0.78	26.09	Arno Bay.....	0.24	0.36	13.01
Aldinga.....	0.58	0.60	20.56	Cleve.....	1.27	0.48	—
Myponga.....	0.58	0.73	30.35	Cowell.....	0.68	0.44	11.57
Normanville.....	0.46	0.57	20.88	YORKE PENINSULA.			
Yankalilla.....	0.31	0.60	23.59	Walleroo.....	0.57	0.55	14.19
Mount Pleasant..	0.76	0.86	27.62	Kadina.....	0.59	0.51	16.08
Birdwood.....	0.50	1.08	29.78	Moonta.....	0.53	0.52	15.39
Gumeracha.....	0.54	1.09	33.69	Green's Plains...	0.48	0.52	15.97
Millbrook Reservoir	0.60	1.20	38.63	Maitland.....	0.56	0.63	20.31
Tweedvale.....	0.53	1.05	36.12	Ardrossan.....	0.24	0.52	14.25
Woodside.....	0.46	1.02	32.48	Port Victoria....	0.20	0.48	15.62
Ambleside.....	0.57	1.12	25.23	Curramulka.....	0.48	0.61	18.31
Nairne.....	0.46	0.96	28.63	Minlaton.....	0.34	0.53	18.06
Mount Barker....	0.46	1.04	31.54	Brentwood.....	—	0.41	16.02
Echunga.....	0.87	1.09	33.41	Stansbury.....	—	0.62	17.15
Maaclesfield.....	0.96	0.90	30.90	Warooka.....	0.09	0.46	17.97
Meadows.....	0.80	1.07	36.61	Yorketown.....	0.17	0.49	17.35
Strathalbyn.....	0.68	0.69	19.45	Edithburgh.....	0.08	0.53	16.70
MURRAY FLATS AND VALLEY.				SOUTH AND SOUTH-EAST.			
Meningie.....	0.48	0.65	18.83	Cape Borda.....	0.18	0.61	25.13
Milang.....	0.63	0.64	15.47	Kingscote.....	0.11	0.47	19.15
Langhorne's Creek	0.63	0.46	14.88	Penneshaw.....	0.05	0.50	19.53
Wellington.....	0.49	0.74	14.85	Victor Harbor....	0.31	0.72	21.51
Tailem Bend.....	0.56	0.48	14.92	Port Elliot.....	0.49	0.67	20.17
Murray Bridge....	0.53	0.58	13.98	Goolwa.....	0.44	0.65	17.87
Callington.....	0.55	0.69	15.56	Meribah.....	0.76	—	—
Mannum.....	0.56	0.51	11.66	Alawoona.....	0.57	—	—
Palmer.....	0.44	0.46	15.58	Mindarie.....	0.64	0.41	12.39
Sedan.....	0.57	0.52	12.37	Sandalwood.....	0.67	0.50	14.98
Swan Reach.....	0.54	0.35	11.05	Karoonda.....	0.70	0.39	15.32
Blanchetown.....	0.36	0.51	10.01	Pinnaroo.....	1.03	0.40	15.60
Endunda.....	0.42	0.70	17.53	Parilla.....	0.45	0.42	14.77
Sutherlands.....	0.32	0.33	11.27	Lameroo.....	0.74	0.54	16.51
Morgan.....	0.99	0.48	9.26	Parrakie.....	0.85	0.38	14.83
Waikerie.....	0.65	0.30	9.79	Geranium.....	0.90	0.41	16.83
Overland Corner..	0.27	0.49	10.15	Peake.....	0.69	0.55	16.86
Loxton.....	0.98	0.48	12.36	Cooke's Plains...	0.82	0.54	15.31
Renmark.....	0.92	0.47	10.98	Coomandook.....	0.82	0.51	17.50
Monash.....	0.52	—	—	Coonalpyn.....	0.59	0.68	17.51
WEST OF SPENCER'S GULF.				Tintinara.....	0.67	0.49	18.89
Eucula.....	2.73	0.59	9.98	Keith.....	0.76	0.36	18.38
Fowler's Bay.....	0.30	0.40	12.14	Bordertown.....	0.44	0.74	19.46
Penong.....	0.09	0.35	12.61	Wolseley.....	0.37	0.60	18.31
Ceduna.....	0.04	0.26	10.25	Frances.....	0.50	0.68	19.93
Smoky Bay.....	0.11	0.30	11.16	Naracoorte.....	0.73	0.80	22.63
Petina.....	0.20	0.36	13.12	Penola.....	0.76	1.02	23.10
Streaky Bay.....	0.49	0.44	16.11	Lucindale.....	0.48	0.70	24.53
Talia.....	0.16	0.30	15.36	Kingston.....	0.51	0.73	24.71
Port Ellioton....	0.20	0.38	16.66	Robe.....	0.84	0.78	27.14
Port Lincoln.....	0.01	0.58	19.71	Beachport.....	0.49	0.88	29.51
Cummins.....	1.29	0.48	18.65	Millicent.....	0.93	0.94	33.25
Yeelanna.....	0.38	0.31	—	Kalangadoo.....	0.83	0.97	31.25
Ungarra.....	0.39	0.33	17.35	Mount Gambler..	0.87	1.35	36.63

AGRICULTURAL BUREAU REPORTS.

INDEX TO CURRENT ISSUE AND DATES OF MEETINGS.

Branch.	Report on Page	Dates of Meetings		Branch.	Report on Page	Dates of Meetings.	
		Feb.	Mar.			Feb.	Mar.
Alawoona	*	—	—	Gawler River	*	—	9
Aldinga	*	—	—	Georgetown	*	7	7
Allandale East	*	6	6	Geranium	*	28	28
Alma	664	—	—	Gladstone	*	6	6
Amyton	*	9	9	Glencoe	*	12	12
Angaston	*	—	—	Glossop	*	4	4
Appila-Yarrowie	*	—	—	Goode	*	—	11
Arthurlton	*	—	—	Green Patch	*	9	9
Ashbourne	*	—	—	Gulnare	*	R	—
Balaklava	*	14	14	Gumeracha	*	9	9
Balhannah	686	—	13	Halidon	*	—	—
Barmera	682	9	9	Hartley	*	—	—
Beetaloo Valley	*	—	—	Hawker	*	—	10
Belalie North	*	7	7	Hilltown	*	—	—
Berri	*	11	11	Hookina	661	5	5
Bethel	*	—	—	Inman Valley	*	—	—
Big Swamp	*	—	—	Ironbank	*	6	6
Blackheath	*	—	6	Kadina	*	—	—
Black Springs	675	—	—	Kalangadoo (Women's)	*	14	14
Blackwood	*	16	16	Kalangadoo	688	14	14
Blook E	*	—	—	Kangarilla	684	—	—
Blyth	*	7	7	Kanmantoo	*	—	7
Booleroo Centre	*	6	6	Karoonda	*	11	11
Borrika	*	—	—	Keith	*	—	—
Brentwood	*	5	5	Ki Ki	*	—	—
Brinkley	*	R	7	Kilkerran	*	5	5
Brinkworth	*	9	9	Kimba	*	—	—
Bundaleer Springs	*	—	—	Kingston-on-Murray	*	—	—
Bute	*	5	5	Kongorong	686	9	9
Butler	*	—	—	Koonibba	*	5	5
Calca	*	—	—	Koppio	*	9	9
Cadell	*	—	—	Kringin	*	R	7
Canowie Belt	*	—	—	Kybybolite	*	3	10
Carrow	680	4	4	Lake Wangary	*	7	7
Charra	676	4	4	Lameroo	*	7	7
Cherry Gardens	682-4	—	—	Laura	*	7	7
Clanfield	*	—	—	Lenswood and Forest Range	*	—	—
Clare	*	6	—	Light's Pass	664-8	5	5
Clarendon	*	—	—	Lipsdon	*	—	—
Claypan Bore	*	R	R	Lone Gum and Monash	682	4	4
Cleve	*	—	4	Lone Pine	*	—	—
Cobdogla	*	—	—	Longwood	*	—	—
Collie	*	—	—	Loxton	*	—	—
Colton	*	7	7	Lucindale	*	—	—
Coomandook	680	4	4	Lyndoch	675	—	5
Coonalpyn	*	6	6	McLachlan	678	—	—
Cradook	*	—	—	McLaren Flat	686	—	—
Crystal Brook	*	7	7	MacGillivray	*	3	3
Cungena	*	—	—	Maitland	*	5	5
Currency Creek	686	6	6	Mallala	*	16	16
Cygnet River	*	5	5	Maltee	*	6	6
Darke's Peak	676	—	—	Mangalo	*	—	—
Denial Bay	*	—	—	Mannanarie	*	5	5
Edillilie	*	7	7	Marama	*	—	—
Elbow Hill	*	—	10	Meadows	*	11	11
Eurelia	*	R	R	Milang	*	14	14
Farrell's Flat	*	—	—	Milliecent	*	6	6
Frances	*	28	28				

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Mindarie	•	2	2	Rockwood	684	9	9
Minlaton	•	—	6	Rosedale	•	—	—
Minnipa	•	—	4	Rosy Pine	•	—	—
Monarto South	680	—	7	Rudall	•	5	5
Moonta	•	6	6	Saddleworth	•	—	—
Moora	•	6	6	Saddleworth	•	13	13
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Mount Barker	•	4	4	Sandalwood	•	—	—
Mount Bryan	•	—	—	Shoal Bay	•	—	—
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Mount Remarkable ..	•	—	—	Streaky Bay	•	14	14
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Netherton	•	4	4	Waikerie	•	14	14
New Residence	•	4	4	Wall	•	—	—
North Booborowie ..	•	•	10	Wanbi	•	—	—
North Bundaleer	•	—	—	Warcowie	•	•	3
Nunkeri and Yurgo ..	•	4	4	Watervale	•	—	—
O'Loughlin	•	—	—	Weavers	†	9	9
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Pinnao	•	6	6	Wirrabara	662	—	—
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Pompoota	•	—	11	Wirrilla	•	7	7
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Port Broughton	•	6	6	Wookata	•	—	—
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Riverton	•	—	—	Yorktown	•	—	—
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No report received during the month of January.

† Formal.

‡ Held over until next month.

THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA

Every producer should be a member of the Agricultural Bureau. A postcard to the Department of Agriculture will bring information as to the name and address of the secretary of the nearest Branch.

If the nearest Branch is too far from the reader's home, the opportunity occurs to form a new one. Write to the department for fuller particulars concerning the work of this institution.

REPORTS OF BUREAU MEETINGS. UPPER-NORTH DISTRICT.

(PETERBOROUGH AND NORTHWARD.)

HOOKINA (Average annual rainfall, 12in.).

January 8th.—Present: six members and four visitors.

GATES.—Mr. P. Heutschke read the following paper:—"All gates around a homestead, or on a road where they are frequently used should be made so that they can be opened or shut with the least possible trouble. Either wooden or iron gates are the best for this purpose. Wood is the cheapest and lightest material, and is not likely to sag the strainer to which it is swung. Gates should always be swung to a large strainer set deep in the ground, and also swung in such a manner that when unlatched they will swing open and remain in that position, because a gate which will swing shut whilst a vehicle is passing through is likely to cause an accident. A double gate fastened in the middle with a latch of some kind is lighter on the posts than a single gate, yet in a strong wind it is very difficult to close. It is a mistake to have narrow gates. Away from a main road, and where a gate is not used frequently, a wire gate is more suitable than a wooden or iron one. A wire gate can be easily and cheaply made, and if properly rigged will give better results than any other type. Fitted with a good fastening device, it takes very little, if any longer, to shut than the other kind, and often a great deal less time is spent in opening it, because it does not collect silt, necessitating the use of a shovel as is sometimes the case with a wooden gate. Again, when a wire gate is left open for stock to pass from one paddock to another, there is no danger of the wind blowing it shut, and perhaps shutting half the stock off from water. It can also be made much wider without danger of sagging the posts." In the discussion that followed, Mr. J. O'Connor said that the best plan was to have two gates side by side, an iron one about 9ft. wide for ordinary traffic, and a wide wire one through which teams could pass. The majority of members agreed that pipe gates were the best and cheapest in the long run.

HOOKINA, December 11th.—The Hon. Secretary (Mr. R. Wardleworth) read a paper, "Power Farming," and an instructive discussion followed.

MIDDLE-NORTH DISTRICT.

(PETERBOROUGH TO FARRELL'S FLAT.)

MURRAYTOWN.

November 1st.—Present: 12 members and visitors.

Mr. H. Morgan gave a report of the 1924 Winter School for Farmers at Roseworthy Agricultural College.

IMPROVEMENT OF PASTURES.—In the course of a paper dealing with this subject Mr. B. Stair expressed the opinion that ordinary pasture land could be made to double its stock-carrying capacity by the application of a top dressing of

2cwts. of superphosphate. He had proved that lucerne could be considerably improved with cultivation and the application of 1cwt. of super. Treating the pasture in that manner would double the quantity of fodder that could be cut or grazed. The best method of cultivating lucerne was to plough the land in June, and harrow it early in July. It should then be cultivated at least two or three times before the first week in September to keep it loose and free from weeds, and after a favorable rain the land should be cultivated with a springtyne cultivator. The seed should be sown at a very shallow depth, either with a drill or broadcasted, and then harrowed. One to 2cwts. of super mixed with 8lbs. of seed should be sown to the acre. If the land was dirty, it was advisable to fallow the land at least 14 months before sowing, and work the soil continually in the spring and winter months to keep the weeds under control and the soil in a loose tilth. It was best to sow the seed in September, because there was then very little danger of the land becoming caked with rain before the young plants were established. When once established, the crop should not be grazed off too quickly. It was advisable to wait until flowers developed, because at that stage of growth the plants had strong roots and would not be pulled up easily. If the crop made a sufficiently high growth it was advisable to cut it in preference to feeding off. The lucerne could be cut, and the stock could be allowed to eat the lucerne in the paddock after it was cut, but they should not be permitted to nip off the fresh shoots. After the first cutting, the lucerne would make a wonderful growth, especially if rain fell soon after cutting, or immediately before cutting. When once established, the lucerne should be cultivated with a springtyne cultivator every year in July or August, and 100lbs. of super to the acre should be applied with a drill or combine.

MURRAYTOWN.

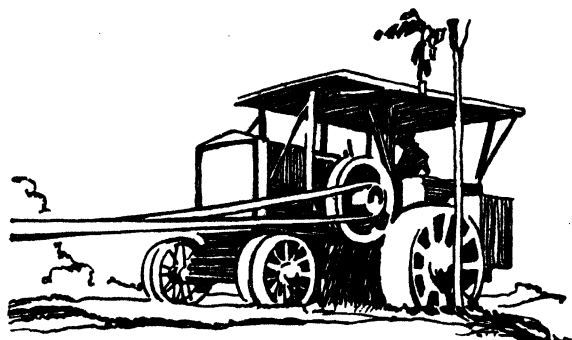
January 3rd.—Present: 12 members and visitors.

Mr. W. Reichstein read a paper, "Haymaking," in the course of which he stated that the best time to cut the crop was about three weeks after the wheat had formed in the heads of the plants. Fair-sized stooks were recommended so that the wind would not blow the sheaves over. The stack should be built on rising ground, wood being used for the foundation. The speaker favored a square-cornered stack, and the outside sheaves being placed on edge to prevent slipping. A good steep roof should be built, and the stack finally covered with straw. Mr. B. Starr, in discussing the paper favored a raised concrete floor on which to build the stack. Messrs. Cobine, Nottle, and Tregenza favored straw for the foundation. Mr. F. Tregenza said that sprinkling sulphur over the hay when stacking kept mice away. The Hon. Secretary (Mr. F. Pitman) said he intended to erect a mouse-proof hay shed, and considered that the cost of the shed would be paid for by the hay that would be saved, and it would also dispense with having to cover the stack each year with straw.

WIRABARA (Average annual rainfall, 18.91in.).

January 10th.—Present: 10 members.

Mr. W. Elfinson read a short paper, "Cruelty to Animals," and in the discussion which followed Mr. J. Hollitt in referring to sore shoulders suggested padding the collars of horses that were subject to sore shoulders, one pad being placed on top and one on the bottom of the sore. Mr. W. Stephens advocated easing the collar by cutting the stitching of the lining and removing some of the stuffing, the collar would not be damaged in any way, because it could be repaired with a few stitches. Mr. H. Jericho considered that much trouble was caused through the neglect and carelessness of drivers. He suggested lifting the collars whilst the horses were fresh, so that the air would cool the shoulders. Members agreed that if farm horses were properly fed and looked after there would be no need to rest them between work, because the team was able to "spell" when other work had to be done for which horses were not required. Members considered that animals should receive more kindness than was shown by some drivers, and decided that cases of wanton cruelty should be brought before the proper authorities.



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LOWER-NORTH DISTRICT.

ADELAIDE TO FARRELL'S FLAT.)

ALMA.

September 30th.—Present: 13 members.

Mr. A. W. Freebairn read a paper, "Food Values," and in the discussion that followed Mr. A. J. Shepherd remarked that Cape barley as a green food was preferable to malting barley. He had found that a block of wood in the mouth of a cow was an excellent means of treating a cow "blown" on green-feed. Mr. W. Brown emphasised the food value of good hay. He advised feeding on hay at night; the horse had to chew the hay thoroughly, and obtained more nourishment than from chaff which was often "bolted" by a hungry animal. Mr. A. Smyth also spoke of the value of good hay. The Alma soils, particularly the black soils, were rich in nitrogen, and produced a heavy growth of flag and straw. Farmers should use heavy applications of phosphatic manures to produce grain. Hay was best when cut green, before the valuable food ingredients had gone from the straw to the head. Mr. Alan Smyth advised late sowing of oats in that district to produce a hay attractive to the horse. Early sowing resulted in a rank growth of straw, which made the hay unsuitable for "long" feeding. Mr. O. J. Murphy expressed the opinion that more oats or barley and less chaff would produce better results than chaff alone, particularly in seasons when the quality of the hay was not first class. Many farmers in the mallee fed horses almost entirely on cocky chaff, but by adding liberal supplies of oats, barley, or wheat they were able to keep their horses in good working condition. In reply to a question relating to the cultivation of Sudan grass, Mr. W. Kuhlmann advised sowing 6lbs. or 7lbs. per acre with lewt. super at the end of September or early October. The soil should be worked down to a fine tilth, and great care taken that seed was not sown too deeply.

LIGHT'S PASS.

November 6th.—Present: 26 members and three visitors.

FERTILISERS FOR ORCHARD AND VINEYARD.—The following paper was read by Mr. C. Robin:—"In writing this paper, I have tried to be guided as far as possible by local conditions, and I would like to point out that, as conditions vary so much even within the district, that no hard and fast rules can be laid down, but that every member should be guided by his own experience, and should not be afraid to experiment. A fertiliser is a substance that contains an essential plant food, and is used when the soil in question shows a deficiency in the same. In order to form an accurate idea of the use and action of fertilisers in the orchard and vineyard, it is necessary to understand the substances on which plants feed, and the manner in which they feed, so that we may gain some idea where a plant food is missing, of what to apply, and how to apply it. All plants are composed of water, organic matter, and mineral ash. Organic matter is made up of water, carbon, and nitrogen, of which carbon is gained from the air in the form of carbon di-oxide. Nitrogen is only of use to the plant when in solution in the soil moisture, in which form it is easily washed out of the soil, and as trees and vines need a good deal of nitrogen, it is often necessary to apply nitrogen in some form or another as a fertiliser. Mineral ash is composed of a number of minerals, all of which though only needed in small quantities, are absolutely necessary for the growth of the plant and the formation of fruit. The majority of these minerals are present in sufficient quantities in most soils, and we need only concern ourselves with phosphorus, of which substance the majority of the soils in the State, including this district, are deficient, and potash, which is often lacking in the lighter, sandier soils. Summing up we find that the substances most commonly needed to be applied as plant foods are nitrogen, potash, and phosphorus. These plant foods are only available to plants in the form of a weak solution of soil moisture, in which condition it is termed available plant food, and the aim is to apply a fertiliser that will readily become available for the use of these plants. Generally speaking, fertilisers may be divided into organic manures, such as farmyard manure, green manures, &c., and artificial fertilisers. Taking the organic manures, first we have farmyard manure, which, until a comparatively few years ago was the only manure used at all.

This is a good, all-round manure, being rich in the three essential plant foods, nitrogen, potash, and phosphorus. The manure should be well rotted before use, and should be evenly spread over the ground in winter, to be ploughed in as soon as possible. Between 12 and 20 tons per acre is an adequate dressing. Care should be taken when obtaining farmyard manure to see that no noxious or other undesirable weeds are imported into the garden. The value of green manures of recent years is gradually becoming recognised in this district. The best type of plant for use as a green manure is that known as leguminous, comprising peas, beans, clover, &c., which have the power, by means of bacteria working in nodules on their roots, of fixing the nitrogen from the air and storing it in the nodules on the roots of the plant, thus a soil which has had a leguminous crop ploughed in will be much richer in nitrogen than it was originally. If peas are used, they can be drilled in late autumn or early winter, with the superphosphate, and should be ploughed under during September, or early in October, while they are still succulent. A disc cultivator is very useful in running over the crop to facilitate ploughing, or else drag-chains can be used on the plough. Various types of legumes, of which *melilotus* seems the most suitable for this district, can also be used as a green manure. These seed early, and become permanent on the soil. Both farmyard manure and green manure, when in the soil, turn into the substance known as humus, at which stage they are being attacked by soil bacteria, and nitrogen is converted into soluble nitrates, available for plant use. Humus, besides enriching the soil, improves the texture of it; it has a great water-holding capacity; it tends to make heavy soils more opened and better drained, whilst it has a binding and firming effect on light soils. Artificial fertilisers are divided into three types, according to the plant food which they are intended to supply. *Nitrogenous Fertilisers*.—The general effect of nitrogen on fruit trees and vines is to stimulate their growth. If it is present to excess in a soil, the result will be a rank growth, and coarse, sappy fruit. However, used with common sense, growers may obtain a great deal

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of benefit by the use of this valuable fertiliser. Numerous nitrogenous manures are on the market, but for most soils sulphate of ammonia is to be preferred, being cheaper per unit of nitrogen. If, however, the soil is deficient in lime, one of the nitrates, such as nitrate of soda or nitrate of lime should be substituted, because sulphate of ammonia is only adding acidity to the soil. Nitrogenous fertilisers should be applied in the spring soon after the fruit crop is set, because they have a tendency to injure the setting if applied earlier by causing the sap to flow too freely at this critical period. If applied in the winter, it might be washed out of the soil by the time that it is wanted in the growing season. Also, by waiting till the crop has set, the amount of manure necessary can be gauged. The amount applied per acre varies with the size, age, and condition of the trees, as well as the crop they are carrying. Nitrogenous fertilisers are also very useful to apply as a stimulant at any time during the summer, or when the tree is carrying too heavy a crop. If applied just before a rain, so much the better.

Phosphatic Manures.—Phosphorus is a substance which is only slightly soluble in soil moisture, so that, although it may be found in the soil in fairly large quantities, only a small proportion becomes available each year for plant food, and so an addition of some soluble phosphate becomes necessary. With fruit trees and vines, the general effect of phosphates is to increase the crop, and to influence the ripening of fruit and wood. In our orchard we have found heavy dressings of superphosphate tend to check the habit of fruit trees to crop only on alternate years; and the result has been more regular crops. Phosphatic manures may be divided into two classes, the acid-soluble, such as bonedust, rock phosphate, &c., and the water-soluble, such as superphosphate, Thomas' phosphate, &c. Of the acid-soluble type, bonedust is probably the best known and perhaps the most useful. It is a very useful manure in very wet patches, such as those soils in this district subject to flood, where a more soluble manure would be washed out, and it is also a very good manure to place in the holes when planting young trees. Bonedust, it must be remembered, will last for years in the soil, because only a small part of it becomes available each year. Bonedust can be applied at the rate of 3-5cwt. per acre. Of the water-soluble type of phosphate, which becomes available to the plant the year in which it is applied, superphosphate stands alone for most soils. This is generally obtained from ground rock phosphate, treated with sulphuric acid to render it soluble. When in the soil, superphosphate reverts quickly, in which form it becomes slowly available as a plant food. Plants exude from their roots a slightly acid fluid, which can attack this reverted phosphate to enable it to be assimilated as a plant food. If the soil is acid it is better to use Thomas' phosphate. Superphosphate is the most widely used of all fertilisers in this State, because practically the whole country is deficient in phosphorus, and superphosphate is quick in its action, and gives good return for the money spent on it. Superphosphate should be applied in the winter, so that it will be ready for assimilation by the roots, when the growing season commences. It is best drilled in before ploughing to ensure that it will get down to the roots when ploughed under, and not draw the roots up after it to the surface. The amount applied per acre varies according to the condition of the soil and trees or vines; up to 3cwt. or 4cwt. can be used for heavy-cropping trees.

Potash.—Generally speaking, in this district only the poorer, sandier types of soils are deficient in potassium. Where potash is applied to these soils, however, a marked improvement can be noticed. The general effect of potash on fruit trees and vines is to improve the flavor and quality of the fruit, besides having a beneficial effect on the healthy development of fruit buds. Potash may be obtained in several forms, of which sulphate of potash seems to give the best results in the vineyard and orchard. This fertiliser can be mixed with the superphosphate to be drilled or broadcasted at the rate of 1cwt. per acre.

Burnt Prunings.—The practice of using a burner in disposing of the prunings from trees and vines is a good one, because the ashes which fall are largely composed of potash and are a valuable addition to the soil. Pressed skins from the distillery also make a good manure. They are of about the same composition as farmyard manure, and have the same effect. Lime, although not actually a fertiliser, can be mentioned briefly, because if the soil is deficient in it, not only will the soil have a tendency to become acid, but many of the plant foods remain insoluble, and the plants cannot make use of them. A fair application to sour soils would be 12cwt. fresh, equal to about 16cwt. slaked lime. Gypsum comes under the same

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heading as lime. It is not in itself a fertiliser, but it helps to set free other plant foods, chiefly potassium. It has not the value of lime in sweetening sour soils. Mixed manures that can be bought ready mixed are not to be advised, because very likely you are paying for something you do not want, and in any case they generally prove more expensive than if you buy the ingredients and mix them yourself. The man that mixes them does not know the condition and requirements of your soil as well as you do yourself. The only way to find out the requirements of your soil is to experiment and exercise common sense.

LIGHT'S PASS.

December 12th.—Present: 27 members and four visitors.

Mr. C. H. Beaumont (Orchard Instructor and Inspector) delivered an address, "Dehydration."

THE FRUIT INDUSTRY.—At a further meeting, held on January 8th, the following paper, under the heading "Gathering, Grading, and Marketing Fruit from the Grower's Point of View," was read by Mr. L. Plush:—"Care must be taken to pick fruit when it is at the right stage of maturity. For canning, apricots and peaches must be picked on the firm side, yet not too green. Green fruit is useless to the canner, because it shrivels instead of ripening, and if too ripe will bruise, and is only fit for jam. It is well for every grower when emptying buckets, to place any fruit too ripe for the factory in a case set apart, and all that fruit can be dried. Duchess pears for canning should be picked to size only with a ring, and the trees should be gone over at least three times. The grade should not be under 2½ in. It is unwise to pack windfalls, one should use them for drying. Care must be taken not to break the stem, particularly if the pears are for export. When picking pears and apples for export, the fruit must be handled carefully, because if it is bruised, cut, or scratched, or the stem pulled out, it will spoil the fruit. On no account should fruit intended for export be poured from the bucket into the case. Prunes, in the majority of cases, are used for drying, and care should be exercised to see that they are properly ripe. A mistake is often made with the D'Agen prune, because it is so frequently picked. In America, this prune is never picked, but allowed to fall to the ground, and is then picked up. Splendor prunes do not drop, so that the grower can always leave them on the trees until they are properly ripe. *Grading.*—All fruit should be graded. It is not necessary to grade peaches or apricots to size when fresh, but there is always a portion of the fruit that is scabby or over-ripe, and that should never be included with the canning sample, but set aside for drying. Duchess pears need little grading, unless for damaged fruit or windfalls. All export fruit must be properly graded, not only for damaged fruit, but for size. It is also essential to reject any fruit showing scab, codlin moth, bruises, cuts, and bitter pit. Any fruit picked under 2½ in. grade or with the stems pulled out, should also be rejected. If the fruit is packed and one apple or pear goes bad it has a tendency to affect the whole case. With all fresh fruit the grower should make an even grade. The appearance of the produce may make a difference of £2 per ton to the producer. *Marketing.*—This is the bane of the orchardist. Prices are mostly low, and every requisite of the grower has risen in price from 50 per cent. to 200 per cent. Why should not fruit also bring high prices? The growers look to the factories for prices, but do not look to themselves. Growers are largely to blame, because they are not organised to make their own prices. This year growers could have realised at least £2 per ton more for apricots had all held out for a definite price and not sold under that price. I advise every grower to do his best to grow good, sound fruit, and harvest it in a clean manner, when the fruit is at the correct stage of maturity. Make the fruit attractive by grading it, and organise a growers' association."

NANTAWARRA (Average annual rainfall, 15.90 in.).

January 8th.—Present: nine members.

THE USE OF THE STRIPPER FOR TAKING OFF THE ONS.—The following paper was read by Mr. R. F. Nicholls:—"With the advent of the harvester the farmer was offered a machine with which he was more easily able to deal with the crops. Economy may not have been the only motive for placing the stripper aside in favor of the new machine, for it will be agreed that throwing up a wheat heap

on a very hot day is by no means an enviable task. However, the number of new strippers sold, and the number of wheat heaps that one notices in the fields, show that there is a slight tendency to revert to the old method of taking off the crop. Undoubtedly, the expedition with which the harvest can be gathered by present-day methods is all in favor of the harvester, reaper, thresher, or header, as the case may be, but the use of such machines means that expensive machinery is being dragged about the paddock doing work which could be done at the heap, so that the harvester shows great depreciation, and needs greater pulling power. In the first instance, the stripper costs less than half the price of other harvesting machinery. It is often difficult to secure a man capable of driving a harvester, whereas the manipulation of the stripper requires less knowledge, and fewer horses to pull it, so that fewer horses would have to be kept on full ration. Being simple in design, there is practically nothing to go wrong, and no time is lost owing to breakages and effecting minor repairs in the paddock which is so often necessary with the harvester. All will admit that any make of harvester throws over heads when the crop is tough, whereas the stripper carries them all to the heap. It also stands to reason that machinery which is handling individual grains of wheat must lose some of them during the many operations it goes through before reaching the bag as cleaned wheat. This goes on throughout the harvest to the extent which becomes evident in the paddock if a good rain falls just after harvest. If the bag sewers do not keep up to the harvester, and the wheat has to stand any length of time, the heaps of bags are liable to capsize or be let down by rabbits, and are liable to damage by rain, which causes a great amount of work at a busy time. Having used a stripper to take off the crop, cleaning can soon be accomplished with a motor power winnower, which will clean anything up to 500 bags per day, and make a good average sample of wheat. All screenings and heads are saved, and can

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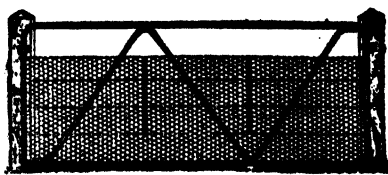


Fig. 132. Cyclone "N" Paddock Gate with round corners swung on face of posts. Can be had either rabbit-netted or with plain wires which make the gate sheep-proof.

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be fed to stock. The cocky chaff is also conserved for feeding to stock, which is valuable in a dry year, and in any year it can be fed to stock when they are not working and paddock feed is not enough to keep them going. It would be better to take off all the crop with strippers. The use of the stripper entails harder work, but the harvest would not last any longer than if harvesters are used. A larger area can be reaped each day with a stripper than with a harvester, providing the machines have combs of equal width, and if there is a boy to throw up the heap considerably more can be reaped with the stripper. With about 300 bags to each heap of wheat, sewing could be done more quickly, and the bags more conveniently situated for carting. Or, it would be profitable to work a stripper in conjunction with the combined reaping machine. After the year's expenses, the farmer usually requires a little cash at harvest time to meet expenses, and the wheat reaped with the harvester could be sent to the market and that reaped with a stripper dealt with afterwards. Very steep or rough ground can be reaped with the stripper, and under such circumstances it would gather more wheat than the harvester, and show less signs of wear and tear." In the discussion that followed, members generally differed on the point that a greater area could be reaped per day with the stripper, even allowing for a boy to keep up the heap, but agreed that in a light crop or on rough ground, the stripper was still most economical.

OWEN.

January 9th.—Present: nine members.

HARVEST REPORT.—The Hon. Secretary (Mr. R. S. Harkness), in the course of a paper dealing with this subject, first outlined weather conditions that prevailed during the 1924-25 season. In commenting on the grain harvest, the writer of the paper said Ford was one of the best varieties for the year, and averaged eight to 11 bags to the acre. Dan again gave satisfactory returns, especially on light soils, and yielded over 10 bags to the acre. Nabawa gave further promise of being a successful variety, nine bags to the acre being returned. Sultan promised to yield exceptionally heavy crops, but owing to the ravages of rust the average did not exceed eight to nine bags to the acre; the grain was shrivelled, and only weighed 51.56lbs. to the bushel. Gluyas was badly affected with rust, and harvested 12bush. to the acre. In the discussion that followed Mr. W. Marshman said more rust had been in evidence in the crops during the 1924-25 harvest than he had noticed during the past 20 years. Nabawa had proved to be rust resistant, but Sultan showed evidences of the disease. Leak's Rustproof weighed better than any other variety. Mr. W. Freebairn said Nabawa gave the best yield on his farm. Gluyas Early was pinched, but the weight of the grain was satisfactory. "Take-all" had affected able to stack the trays of fruit under cover, for if rain falls on the partly-dried some of the crops in his locality. Mr. F. Lake reported that Leak's Rustproof and Ford gave good returns, and were free from disease. Sultan gave promise of high yields, but had been attacked with rust. The oat crop was rusty, but gave a good yield of grain.

WILLIAMSTOWN (WOMEN'S).

November 12th.—Present: 11 members.

DAIRYING IN NEW ZEALAND.—Mrs. Thompson, formerly Miss Doris Wakeham, a member of the Riverton Women's Agricultural Bureau, but now a resident of New Zealand, contributed the following paper, which was read by Mrs. Ham-matt:—"In contemplating the passing on to you of some of my experience of the land in this country and England, I find my mind returning to far-distant days in Riverton when the Women's Branch was a suggestion and no more. Then, as now, I believed the suggestion to be a fine one, and now, from accounts I have, I find that the idea has grown into an established institution. The daily paper of September 9th informs me that there is very great progress in this country women's movement, and also comments on the fact that the time has come for the country women of South Australia to seek some kind of unity in organisation, and the suggestion follows that they might well be advised to concentrate efforts on the Women's Bureau Branches. The advantages pertaining to an institution provided with central administration by the Government

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are obvious. I learn with delight that there is a scheme afoot to enable first-class dairying instruction being given. In my two years at Home I met many members of the Women's Institutes, and saw some of its workings. At Chelmsford, in Essex, the members had a stall each market day, and sold vegetables, seedlings, bottled fruits and jams, and various products from farm and small holdings. Also there were fine rest rooms at the club in the town. There were meetings and instruction classes in every little village, and very much valuable knowledge on household and land subjects given to the members. I know of no such association of women in this part of New Zealand at any rate, that is, in the Auckland province. Whilst in England I spent the greater part of two years in the four counties adjacent to London. In Sussex my interests were in purely agricultural areas, but in Essex they were wholly to do with dairying. This latter county is very go-ahead in its facilities for agricultural training, and it is largely due to this and also to the application of the proverbially fine farming methods of men from north of the Tweed, that Essex owes its rapid strides in both milk and cereal production. The southern party of the county supplies a great deal of London's milk. My own work brought me in contact with one of the, if not the finest, clean milk producing places in all England, that of the Lord Rayleigh's Dairies, Ltd., Dairy Farms. These are stocked with Friesian cattle, and are under the management of a very able enthusiast for clean milk production. One witnessed the thorough cleansing process, and wondered how it was possible to get men to attend with such meticulous care to a daily process. Walls, stables, troughs, floors, every washable thing on the sheds are washed prior to milking; cows groomed, and 15 minutes allowed for any dust to settle before milking. The actual milking operation was carried out by men in white overalls and caps, spotless hands, and covered pails, and each cow's milk was weighed and passed into an entirely separate building. Here it was passed through a destructible cotton wool strainer, over one cooler, thence into bottles which were automatically sealed and dated, and were placed in crates ready for distribution. All empties were washed with revolving brushes, and placed in a sterilising cupboard for use. The process, as I have sketchily outlined it, may seem impossibly lengthy, and incompatible with a profitable return, but actually it is all done quickly and ably by men who are paid a bonus on the bacterial count of the milk, hence the care of each man. These farms are now only some of the many places which are producing what is called A Grade (certified and tubercular tested) milk, and the cry is everywhere heard for clean and still cleaner milk. Remembering that almost all farms where there is any large centre are milking for town supply, one realises the possibilities that lie in the production of a milk so clean that it readily commands more money. The ever-increasing memberships of Milk Recording Societies in all the counties is bringing the farmer to realise how much he can lose by keeping a cow, which he finds on recording is a small producer. The purchaser, too, feels safe in buying at sales of these societies and a recorded animal commands a price. I had a good deal of training in cheese and butter making in a well-equipped dairy school, and as all the produce was sold and a variety of costings kept, I had a glimpse of the economic side of the business. In meeting various people who were resident and working on the land, I gained the impression that the women who work actually on the land all day have not also to do the hundred and one things that colonial women must. There was always help in the house, and a farm of any size had men, carters, and so on, who invariably lived in their own cottage. The problem of feeding housed animals economically is one that faces the dairy farmer, and at first I marvelled how so much labor and food could be recompensed. The cry of the dairy instructors and Government agricultural men was 'feed better,' and, of course, economical feeding goes hand in hand with milk recording, as the cow can be fed to her capacity of production. On coming to New Zealand, I had faith in what dairying literature emanating from here had told me, and I believed that cattle were pastured the year through, but I did not realise what I have since seen proved—that the pasture is only part of the food necessary, and that, were it possible to invest capital in buildings, it would be preferable to house dairy cows some part of the winter. It is not done, however, beyond a radius of, say, 20 miles of Auckland, the dairy farmer is mostly a cream producer—that is, he sends cream to the factory, and feeds skim milk to pigs unless he supplies a cheese or casein factory, and then gets whey back. Every farmer's aim is, of course, to breed or obtain the cow that

will produce the most butterfat on the least food, and we have found the Jersey milking, say, 35lbs. a day with a 5 per cent. butterfat test, look better, milk longer, and keep more fit, than a 50lbs. a day Shorthorn with a lower test. The latter is harder to keep to production when food is low; is a heavier cow on rainsoaked pasture. We have found that only from September till January can we do without a supplementary crop. Swedes pulled, carted, and fed whole in the fields with hay as winter feeding, and millet, sorghum, lucerne, and soft turnips and maize from January on. I have not yet seen the English grasses which comprise most of our pastures die down, and there is growth going on almost all the year round. The price of good-hearted dairy land is anywhere from £50 to £80 an acre in this particular district, and this is not volcanic land, and is described as the cow to two acres land. You will understand how each farm has its definite carrying capacity, increased by cropping. A 60-acre farm will carry, say, 30 cows and not one more, so that it is important that there should not be one unprofitable cow. Of course, the only way of really knowing the herd is by the use of scales and the tester. A herd under test (and it is no light job to sample accurately and test a fair-sized herd each month) gives one the knowledge to cull judiciously. Also, on land at £40 an acre it costs something like £12 a year to keep a cow. The farmer with, say, 30 cows averaging 300lbs. butterfat per cow is doing pretty well, and a 350lbs. average is exceptional evidently. The supplier to the butter factory is mostly paid each month on the percentage of butterfat in his cream, and the payment is determined by the price for butter ruling on the London market. There are excellent systems of collecting cream by motor lorry, launch, &c., and the cream is graded immediately on reaching the factory. Superfine brings ½d. per lb. more than first grade, and second grade 2d. a pound less. With ordinary care and cleanliness and freedom from feedy taint, such as turnips give, superfine grade is easily obtained. I have not seen a really dirty dairy shed, but where machines are used (and a great many of the herds are machine-milked here), I can readily imagine that

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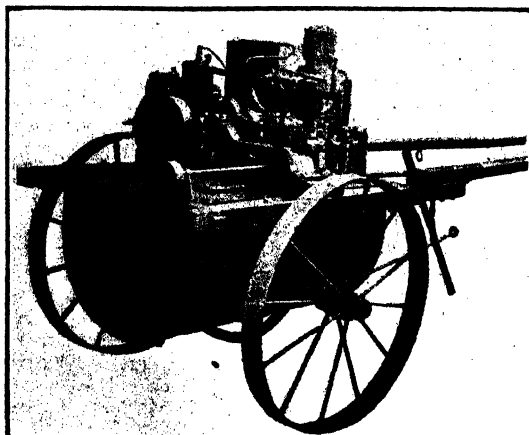
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under men's management they are quite liable to become dirt traps. I find infinite care and strict by-daily attention keeps our machine clean, but the consensus of opinion seems to be in favor of strictly clean hand milking for producing a milk of low bacterial count. All sheds I have seen here have appeared cleaner because of concrete floors. Dairy factories combine with Government inspectors in overlooking all sheds supplying a factory. Personally, I do not like the milking machine, chiefly for the fact that it is difficult accurately to record a cow, but we cannot do without one, which brings me to the labor question. On small farms of, say, 60 acres, employment for two men can easily be found, but they seem invariably to be run by one man and his wife. Female help is highly paid and practically unobtainable even in closely-settled districts, and still less so in districts where roads are bad and isolation very great. Male help simply means more work for one woman in the house, and lack of privacy in a home. Two pounds a week and keep does not seem a great deal of money to pay for a seven-day week and a 12-hour day, but it is apparently all that the industry can pay. Hence, the wage is not attractive to the best type of man. So few small farms have a cottage besides a house. New Zealand women, on dairy farms at any rate, work very hard, but one thing is realised in buildings, and that is convenience indoors. Sinks, washtubs, and very frequently hot water systems are installed in even four-roomed wooden farm houses. This country seems to know a good deal about labor-saving devices, and a modern suburban home (wood, of course) is an eye-opener in the way of heart-delighting cupboards and kitchen helps and appearances. Large areas of dairy country here are reticulated by electric power, obtained, of course, from numerous falls in the Waikato and other rivers. Numerous cows are milked by this power and homes lit by it, but it is fairly costly, and there is always a risk of power failure. However, there is a new scheme now under construction by the Sir Armstrong Whitworth people, and in a couple of years there will be much more power available. In finalising I feel I must say how I would wish to become a member of some kind of society such as the Women's Bureau. One needs so to know what the next woman is doing and thinking. There are Jersey, Shorthorn, and what not breeders' societies for the men, but, alas, nought for the women. We dairying people could easily have meetings at, say, 1 o'clock, just as teams and cricket, and so on, are all fixed early in the day, because everyone has to make for home about four o'clock."

HOME TREATMENT FOR SPRAINS.—Mrs. W. Grigg read the following short paper—"Sprains are due to some awkward movement of a joint, a fall, or a blow, and are recognised by pain, especially on moving the joint. There is also want of power in, and swelling around, the joint. In severe injuries there may be a fracture of a bone that enters into the formation of the joint. The first treatment is a very plentiful application of cold water, so as to prevent as much as possible the swelling. After the swelling has been established, very hot applications, such as hot fomentations or hot water, are most beneficial. When the pain and swelling begin to subside, alternate hot and cold applications do most good; and at this period, good, firm, even bandaging around the joint between the water treatments is advisable. The use of a good stimulating liniment, such as turpentine or compound soap liniment, is very beneficial. The effects of a bad sprain are often felt for months in adults, although children recover more quickly."

WILLIAMSTOWN WOMEN'S.

December 3rd.—Present: 11 members.

FRUIT PRESERVING.—Mrs. Holmes read the following recipes for preserving apricots, pears, peaches, cherries, and nectarines:—"To every pint of cold water add ½ lb. of sugar. These should be placed in a stewpan and boiled, the boiling being continued gently for one and a half hours. If the syrup has boiled away, sufficient boiling water can be added to make up the quantity of syrup that was in the pan before it was placed on the fire. The syrup should then be allowed to become cold. The preserving tins or bottles must be washed out thoroughly. Peel and core the fruit, and cut in halves or quarters any large fruit. Fill the tins or bottles with fruit, and add sufficient syrup to bring it within ½ in. of the top of the tins. This will allow for the juice of the fruit. Procure a deep vessel, such as a boiler or stewpan, put a layer of cheesecloth on the bottom of the

vessel, and place in it the tins or bottles containing the fruit and syrup. Put sufficient cold water in the vessel to come almost to the top of the tins, boil it, and continue boiling gently until the fruit appears to be cooked. It is advisable to press the fruit lightly under the syrup, because the fruit on the top of the tins may not be so well cooked as that underneath. The same amount of water should be kept in the vessel while the fruit is cooking. This difficulty can be easily overcome by adding boiling water. Remove the tins from the vessel and stand on one side to cool. When cool, put the lids on tightly and run sealing wax or mutton suet around the lids. Take every care when sealing the lids, because they must be airtight. This is the most important point in preserving fruit successfully. Oranges and fruit salads may be preserved in the same way. I have also preserved plums for making pies by placing them in an open bottle and adding sufficient cold water to almost cover them. The same method of cooking as outlined above can be followed. When the fruit has become somewhat cool, run about $\frac{1}{2}$ in. of melted mutton suet on the top to keep the fruit airtight. This will not interfere with the flavor of the fruit in any way, because the fat will remain on the surface, and is easily removed when the fruit is required for cooking. The time for cooking varies according to the fruit; if the fruit is ripe, about three-quarters of an hour; if firm, one and a half hours should be sufficient."

BLACK SPRINGS, December 9th.—Mr. A. Siegert gave a report of a tour of inspection of top dressing experiments in the Adelaide hills conducted by the Superphosphates Association. Mr. A. Heinrich read a paper, "Advantages of Government Farms," in which he gave a detailed account of a visit that members had paid to the Booborowie Experimental Farm on October 29th.

LYNDOCH, December 11th.—Mr. J. B. Harris (Orchard Instructor and Inspector) delivered an address in which he dealt with the subjects "Phylloxera" and "Downy Mildew."

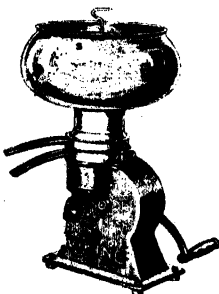
WILLIAMSTOWN, January 9th.—A paper, "Lime and its Application to the Soil," was read by Mr. C. Ross, and an instructive discussion followed.

WESTERN DISTRICT.

CHARRA.

December 10th.—Present: 11 members.

HARVESTING.—In the course of a paper dealing with this subject Mr. A. Haseldine favored an 8ft. stripper, and an up-to-date threshing cleaner for harvesting the crop. He suggested an 8ft. stripper because of labor difficulties, but he would not advise a larger machine on account of the tendency of the large



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machines to drag to the off-side in soft ground. The stripper he considered to be the cheapest type of harvest machinery, because it required fewer horses and less oil than other harvesting implements, and no other harvesting machine could travel over the ground so quickly without causing considerable wear and tear. If a farmer had 400 to 500 acres to reap he would need two strippers, and if the crop was good he should have an extra man at the heap to throw up and change horses. Another point in favor of the stripper was that the farmer could reap a good or bad crop without making any material difference to the wear on the machine. In that district, where the average yield was generally light, the saving of the cocky chaff was a great asset. When cleaning wheat, it was a good plan to cart the grain straight to the stack. If the wheat was allowed to stand in rows after cleaning, it would lose weight. A good discussion followed, in which the majority of members spoke in favor of the stripper.

DARKE'S PEAK.

October 27th.—Present: seven members and five visitors.

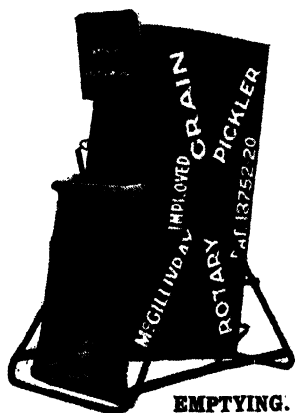
THE BLACKSMITH SHOP ON THE FARM.—Mr. W. Wake, who read a paper on this subject said the blacksmith shop was an essential part of the farm equipment. The shop should not be erected too close to other farm buildings on account of the danger of fire. The erection of the forge was important if the best work was to be performed. A simple and effective forge could be erected in the following manner:—Take an old 200gall. tank, cut out the top, place it in the desired position and fill it with sand. Get a piece of 2½in. or 3in. galvanized iron water pipe about 6in. longer than the width of the tank, then cut a hole in each side of the tank, about 5in. from the top and large enough for the pipe to lie horizontally across the tank 5in. from the surface to the top side of the pipe. Drill three holes ½in. in diameter about 18in. from the end, then cut out the holes, and make a slot 2in. long and ½in. wide. Place the pipe in the holes previously cut in the tank, leaving about 3in. protruding from each end. Fill the tank with sand level with the surface; a basin being placed over the slot cut in the pipe for the fire; then connect the blower or bellows, and make a plug to insert in the other end of the pipe. The plug can be removed occasionally to remove any clinkers that have entered the pipe. Making the fire was also an important part of blacksmithing. To do that the coal or coke should be banked on the forge so that when the material was placed in the fire it would be about 4in. above the pipe, with sufficient coke on top to cover the work with a nice white fire. If heavy welding had to be done a fire brick could be placed above the heat and banked around with coal. In welding of any description it was a good plan to use sea sand or washed sand for sprinkling over the work just as the desired heat approached. Borax was also very good for welding steel, and he had had good results with ordinary cement. Several other fluxes could also be used for welding. It was a mistake in heavy welding to try and force the heat, because that had a tendency to burn the outside of the material before the centre would have had time to become heated. When preparing material for scarfing and welding it was necessary to cut the iron a little longer than the length required when welded—about ½in. for every ½in. of thickness of the material should be allowed. The two ends should then be heated and “upset” for as much as had been allowed for the “upsetting.” The iron should then be scarfed, care being taken not to make the scarf too long. The material should then be placed in the fire, and when it had reached the right heat it should be removed and given a light tap on the anvil before placing the ends together for welding in order that any foreign matter that might be sticking to the material would be removed. Iron that had to be bent should be evenly heated, and it was always advisable not to try and work the iron “half hot.” An excellent method of making a strong bend was as follows:—Centre mark the bend, heat it to the desired heat and cool it off to about ½in. on each side of the centre mark, and then bend it over the anvil. When holes had to be punched close to the end of a piece of iron it was necessary to heat and work the end, in order to prevent it from splitting. That, however, was not necessary with steel. To prevent the punch from jamming when a hole was to be punched through thick metal, the hole should first be punched partly through, the punch removed, and a few ashes from the forge placed in the hole would enable the punch to be driven through without jamming. To punch a large hole in a narrow piece of steel the speaker suggested the follow-

ing plan:—First heat, then cut a slot in the work almost as long as the diameter of the hole required, then heat the material, and work it on the end of the beak to the desired size, and drive a drift through to round it up. In cutting the slot it was desirable to have it about the same distance from the end as the diameter of the hole when finished. To make a cold chisel from tool steel the steel should first be brought to a red heat and drawn out to the desired taper, but care should be taken not to make it too wide, because the side would have to be worked down, and that would be detrimental to the steel, the better plan was to file off the edges. When the steel was shaped it should be heated again, about 8 in. cut off, and that end rounded off with the hammer. There were several different methods of tempering a chisel. The most suitable method for the amateur was as follows:—Heat the cutting edge to a dull red heat, then plunge it into tepid water, and clean the cutting edge with a brick or piece of emery stone. Heat the other end of the chisel to a dull red heat, and take note of the color as it comes to the cutting edge of the chisel. When it becomes a dark blue color, insert about 2 in. of the cutting end into the water, and allow it to cool off, occasionally placing the cutting end into the water. Do not cool off the steel too quickly or the striking end will become too hard. If the chisel is too hard it should be replaced in the fire, but when tempering the color should be allowed to run to a lighter blue. If the chisel is too soft it should be tempered to a straw-colored heat. In drawing out work that was to be tapered—such as axles, punches, &c.—it was always advisable to first draw it down on to a square taper, and then work the corners down. Spring plate tempering was done by making a fairly large charcoal fire, then putting the plate in the fire and drawing it through the fire until it was heated to a dull red color. Then a piece of seasoned kauri should be rubbed up and down the plate until it was noticed that the timber did not burn, but sparked easily. If the plate was too hard it should be allowed to smoke freely before being plunged into the water. Boxing wheels was another job that could be carried out on the farm. First of all a

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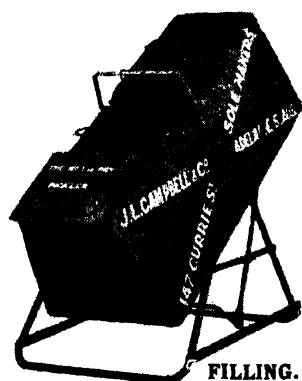
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compass should be made with a piece of hardwood 2½ in. square and tapered to about 1½ in. round on one end, and to the other end a piece of board 2 in. x ½ in. should be bolted. The compass was for the purposes of seeing that the box was driven into true position. To box the wheel he suggested the following plan:—Take the box and cut strips of material around the box lengthways, then place it in the hub and drive lightly. Get the compass and see if it is travelling correctly, if so, it can be driven further and again tested and finally driven home. If it is not in a true position, take the wedge chisel and drive this in the lowest side of the hub, remove the chisel, and drive in a hardwood wedge until the box is in the right position. It is essential that when driving, the box should fit very tightly on the nose, otherwise the box will break. When the box is driven in it can be wedged where necessary to prevent oil and grease getting between the box and hub. In driving a heavy box a wrought iron washer should be placed on top of the box, about the same size as the overall measurement of the box, then a piece of tyre iron 4 in. x 1½ in. and about 5 in. in length should be placed on top, and the box could be driven home without any fear of it breaking, care being taken to see that the nose was tightly in position.

McLACHLAN.

December 6th.—Present: 12 members.

Mr. D. Attick gave a lecture, and illustrated his remarks with diagrams on a blackboard, in order to explain more fully the methods in which his block had been cultivated since 1914. From Mr. Attick's experience it was gathered that it was not safe to grow more than two crops of wheat in succession on new land if a farmer desired to reduce any possibilities of the crops being attacked with "take-all." A crop of oats the third year, and the land fallowed for wheat the next season was recommended as the most profitable practice. Oats ensured a good following crop of wheat, and the burning of the stubble acted as a check to "take-all." Mr. W. Hawke stated that whilst his crops had not suffered from "take-all" to any great extent, yet they were invariably "nipped" when two crops were grown in succession following fallow. A better plan was to sow oats for grazing the second year, and if the season was favorable sufficient oats could also be reaped to handfeed the sheep during the following autumn. He advocated pouring a thin stream of oats from the tail of a spring dray or through a hole in the bottom of the dray at the rate of about ½ lb. of oats per sheep daily, starting when there was plenty of dry feed available. Mr. Smith drew attention to the partiality of stock for Lachlan oats. His sheep regularly crossed young growing wheat to feed on Lachlan oats in the same stage of growth. Mr. W. Hawke stated that of two parallel strips of oat stubble consisting of Lachlan and Calcutta Cape varieties, the straw of the Lachlan crop was all eaten before the Calcutta straw was touched by the sheep.

MILTALIE (Average annual rainfall, 14.55 in.).

November 8th.—Present: six members and three visitors.

THE SOCIAL SIDE OF FARM LIFE.—"Whenever we have visitors from town they almost invariably remark how quiet and dull it is, and I sometimes wonder if they are not quite right," said Mr. A. Wilson in a paper dealing with the above subject. Continuing, he said it was possible to get into a groove, and miss much of the enjoyment of life that everyone was entitled to. To most people in rural districts, work was the keynote of their lives. That was inevitable, but later on in life one noticed that the body was not so ready to answer to the call of work as it used to be, and there was not the same pleasure in work. It could not be said that they were tired or overworked, or that their bodies were physically unfit, but he thought the trouble was due to a need for relaxation and change. The mind exerted a great influence over the body, and farmers should pay more attention to that important fact. The reason that benefit was derived from a holiday was not so much that the body was rested, but rather that the mind was filled with fresh sights and ideas. In the majority of rural centres, the population was rather scanty, and it was not easy to cultivate the social side of life to any great extent. It was very true that there was a continual drift of young people to the cities, and that was mainly due to the fact that the desire for social relaxation could not be gratified in the country to the extent that it should be. To keep children satisfied with farm life parents would be well advised to provide for social intercourse, which was so strong at certain periods of the

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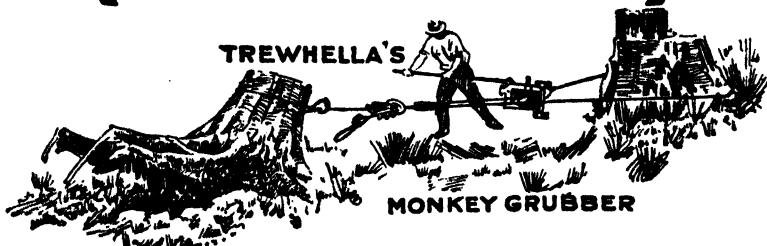
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lives of young people. The motor car had done much to shorten distances and make life more enjoyable, and farmers should not begrudge any reasonable amount of time spent in pleasure and relaxation." In the discussion that followed, Mr. W. G. Smith believed it would be to the mutual benefit of all concerned if young people were given the opportunity to take a holiday at intervals to see other parts of the State. He thought that young people should take an interest in beautifying and improving the homestead. Mr. J. P. Story believed that a reasonable amount of social life was a good thing, because it gave young people an opportunity to exchange ideas and compare notes. He thought the ambition of the child should be noted and fostered. Mr. A. S. Brown said an occasional holiday to other districts was a good suggestion, providing the holiday gave a complete change of conditions. Mr. J. S. Jacobs (chairman) believed in recreation and relaxation. He considered that the best way to keep the young people on the farm was to give them some interest in the returns.

CARROW, November 12th.—The Hon. Secretary (Mr. C. Puckridge) read a paper, "Power Farming," and an interesting discussion followed.

SMOKY BAY, December 6th.—The meeting discussed the subject, "Top Dressing Pasture Lands," and one of the members stated that he intended dressing a small area of land with super during the coming season.

SMOKY BAY, January 10th.—A paper, "Power Farming," was read by the chairman (Mr. H. Tremaine), and an instructive discussion followed.

TALIA, December 28th.—Members discussed the question, "Stacking Grounds at Venus Bay." Other matters of local interest were also brought before the meeting. A subscription was raised for one of the members of the Branch whose crop had been totally destroyed by hail stones.

EASTERN DISTRICT.

COOMANDOOK (Average annual rainfall, 18.01in.).

November 5th.—Present: 13 members.

TRACTOR v. HORSES.—A short paper dealing with this subject was contributed by Messrs. A. Butler and S. Williams. It was stated that much discussion had arisen between the farmers of Coomandook as to whether the tractor was suitable for the land in the district. The writers of the paper had worked with a tractor, which would do the work of six horses. According to the price of fuel at the time of writing, that tractor would work more cheaply than a six-horse team. Ploughing with a team of six horses it was possible to do six acres a day, but with the tractor, in the same number of hours, eight to nine acres a day could be ploughed. Any farmer holding a 1,500-acre block required two teams, but better and cheaper results would be obtained with a tractor and one team than with two teams. Every farmer should have a stationary engine of some description, which would cost anything from £50 to £120, according to its horse power. A 22 horse power tractor of the type mentioned cost £198 10s., and would cut chaff, winnow, and do all the work that a stationary engine would. In their opinion, the farmer of to-day would never be able to dispense with horses, nevertheless, the tractor was of great assistance to the farmer. The engine required no grooming, there were no stables to clean, no feeding at night, and no lost time in the mornings.

MONARTO SOUTH (Average annual rainfall, 14in. to 15in.).

December 6th.—Present: 22 members and visitors.

Mr. C. Paech read a short paper dealing with the "Care of Farm Machinery," and in the discussion that followed one member recommended motor cylinder oil for lubricating, because it was able to withstand heat much better than ordinary oil, and although it was a little more expensive in the first place it would prove cheapest in the long run. The best method to keep bolts tight was to use lock nuts.

MOOROOK.

December 12th.—Present: nine members.

DRYING AND HARVESTING STONE FRUIT.—Mr. S. Sanders read the following paper:—"Very great attention is necessary to produce a saleable sample of dried fruit. Only sound, ripe fruit should be picked and carefully placed in wooden boxes. The fruit should be kept cool after it is picked until it reaches the sulphur house. Pitting or cutting should be cleanly done, because broken fruit spoils the appearance of the dried article. When cut, the halves should be placed as closely together as possible on wooden trays, so that the fruit will not tilt when the trays are being handled. The fruit should not be allowed to remain for any length of time before sulphuring, because it is almost impossible to properly sulphur partly-dried fruit. The size of the sulphur box to use is a much-debated question. I prefer one 5ft. long x 3ft. 6in. wide and 4ft. high. A sulphur box of painted beaver board will last for many years with very little attention. The amount of sulphur to be used depends upon the ripeness of the fruit to be sulphured, weather conditions, and the quality of the sulphur. The grower should endeavor to gauge the quantity to be used by keeping a record of the amount of sulphur placed in the box or house, and if the fruit is not properly sulphured in 6½ hours, the amount of sulphur should be increased in the next batch. A good receptacle in which to burn the sulphur is an old frying pan or flat baking dish. A little dry grass placed under the sulphur will assist the sulphur to burn, but on no account should any material be used that gives off a volume of dense smoke. The fruit when sulphured should be placed on the drying green and left until fairly tough; when it can be squeezed between the fingers without breaking. A lucerne bed sheltered from dust is an ideal drying green. The fruit should then be put into sweat boxes, care being taken to keep the damaged and inferior fruit in separate boxes. A grading machine can only grade to size, so that grading according to color and condition must be done by hand before the fruit is taken to the packing shed. Peaches require a little more sulphur than apricots, and require greater care in picking. If not quite ripe when picked, peaches when dried will be almost unsaleable. Elberta peaches can be allowed to fall to the ground, and if picked up frequently during the day, and washed or brushed before they are cut, turn out a very attractive article. If rain threatens while the fruit is on the drying green it is advisable to stack the trays of fruit under cover, for if rain falls on the partly-dried fruit, some will more than likely be spoiled. Pears should be halved and placed in the sulphur box for at least 12 hours, and should have a transparent appearance when sulphured. They should be placed out on the drying green for two days, the trays stacked, and the drying process completed in the stack. Do not pick immature or unripe fruit for drying purposes, because that class or article makes it very difficult to obtain sales."

WILKAWATT (WOMEN'S) (Average annual rainfall, 16in. to 17in.).

December 9th.—Present: 13 members and four visitors.

The monthly meeting of the Branch was held at the residence of Mrs. A. Billings. Mrs. Billings read a paper, and the following recipes were supplied by the members mentioned:—Mrs. F. Koch, carrot jam—Ingredients: One bunch of carrots, 3 lemons, 3lbs. of sugar, and 8 cups of water. Method: The carrots should be minced, the lemons cut into fine pieces, and all the ingredients boiled together for four hours. Red tomato jam—Ingredients: 4lbs. of tomatoes, 3 lemons, and 3lbs. of sugar. Method: The tomatoes should be skinned and cut up, the lemons cut up finely, and all boiled together until the jam sets. Raspberry jam, Mrs. A. Oram—Ingredients: 6lbs. of raspberries, 5lbs. of preserving sugar, and ½lb. of red currant juice. The following method was suggested:—"To obtain red currant juice, put about 1½lbs. of red currants into a jar. Stand the jar in boiling water, and allow it to boil until the juice flows off the berries. Put the raspberries into a preserving pan with the currant juice, and bring slowly to the boil. Boil for five minutes, add sugar, and stir until it dissolves. Boil until the jam sets."

WILKAWATT (WOMEN'S) (Average annual rainfall, 16in. to 17in.).

January 13th.—Present: 14 members and four visitors.

THE IDEAL KITCHEN.—Mrs. Pritchard contributed the following paper:—"The kitchen is the most important room in the house, because it is the living room of the family as well as the workshop of the home; it is the maid's sitting room

when the work of the day is done, and the workshop of the woman who manages the house without domestic help. Compactness is a great advantage in any kitchen, and the disposition of the cupboards, sink, stove, and table should be considered with a view to minimising the number of steps that have to be taken in the course of the various household duties. A small kitchen saves much walking about, but is more difficult to work in, because constant tidying is necessary. The smaller the kitchen, the more thought is needed in the equipment. Adequate ventilation is most necessary, and in this district a southern aspect will prove most satisfactory. In considering the supply of water, the person constructing the house should aim at having taps in the kitchen, and pipes for the removal of waste. The sink should be placed along the outside wall, preferably under a window, with a siphon trap and draining boards. No cupboard should be placed under the sink. Excellent sketches and plans of sinks, siphon trap, draining basket, breakfast alcoves, cupboard allocation, kitchen table with cupboards above, and kitchen cabinets can be found in No. 19 of *Harmsworth's Household Encyclopaedia*. This book also gives plans of houses, showing the best situation of the kitchen and dining room, and color schemes shown as charts with lucid remarks. Light in the kitchen can be provided by a window in the chimney, and wall lights are suggested in order to avoid shadows. It should also be the aim of the designer to have a side light on to the stove from the main window. The floor should be covered with linoleum, and a mat placed in position where the most standing is done. A light-colored floor covering is recommended, because it will show the least dirt. Whenever possible, the woman in the kitchen should sit down, using a high stool for a seat. A working surface at which work may be done without bending the back will be found to reduce fatigue to a minimum. The sink should be at such a height that the arms of the worker can be stretched out in a normal working position without bending the back at the waist or shoulders. A suitable height is 9in. between the bent elbow and the working surface. Light-colored walls reflect the best light, and for the best results either a painted surface, tiles, calcimine, tiled pattern, varnished paper, or distemper are recommended. The equipment of the kitchen should be of the simplest form. Curtains of gingham or some such washable striped or check material will be found most suitable. A clock is necessary. The relative positions of the sink, kitchen cabinet, stove, and serving table should be such as to minimise the number of journeys between them, i.e., sink under window, stove on the right, kitchen cabinet on left, and china cupboard adjacent to the servery or dining-room door. Find the scheme that suits the rounds of preparing, serving, and clearing away, and adopt it. A central table is useful in a large kitchen; it should be covered with linoleum, with a piece of zinc attached for hot pots. Sugar bag oven cloths can be used, and rings should be attached to the holders for hangers in preference to tape.

BARMERA, January 12th.—Twenty-eight members and a large number of visitors attended the January meeting, when Mr. J. Johnson, of the Renmark Branch, delivered an address, "Fruit Drying."

LONE GUM and **MONASH**, December 17th.—Mr. J. Hurst delivered an address, "Common Ailments of the Horse," and replied to numerous questions.

WINKIE, December 29th.—Mr. F. Olorenshaw, of Renmark, visited the district, and during the afternoon inspected a number of blocks in the settlement. In the evening he delivered an address, "Trays versus Racks for Fruit Drying."

SOUTH AND HILLS DISTRICT.

CHERRY GARDENS (Average annual rainfall, 35.03in.).
December 9th.

The annual social of the above Branch was held on December 9th. There was an excellent attendance of members, visitors, including members from the Ironbank, Kangarilla, and McLaren Flat Branches. The programme consisted of addresses and vocal and instrumental items, and the social concluded with an excellent supper.

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CHERRY GARDENS (Average annual rainfall, 35.03in.).

January 6th.—Present: 10 members.

SHEEP FOR THE HILLS.—Mr. H. Strange, who contributed a short paper on this subject, said he had crossed different breeds of sheep with the view of determining what class of sheep was most suitable for the Adelaide hills. He first crossed South Down ewes with pure bred Leicester rams, but whilst the progeny developed into a good butcher's sheep, the wool was of a very poor quality. He then mated crossbred ewes with Leicester rams. That cross produced an early-maturing, large lamb, but the wool was of inferior quality. The animals were bad fencers, and it required a good 5ft. wire netting fence to keep them in the paddock. Next he purchased young Comeback ewes, and mated them with pure bred South Down rams, and he was highly pleased with the result. The lamb from that cross made an excellent market carcass, and always brought a good price. The ewes cut a good fleece of wool of fine quality, which realised a high price. The lambs were a little slow in development, but they were not troublesome to keep in the paddocks. The Comeback ewe mated to a South Down ram he believed to be the best breed of sheep for the Adelaide hills.

KANGARILLA.

November 7th.—Present: 27 members.

The meeting took the form of a debate on the subject, "*Horse versus Motor.*" Messrs. G. Connor and A. Bottrill supported "horses" whilst Messrs. R. Morphet and T. Golder spoke in favor of "motor traction."

On November 21st a homestead meeting was held at Mr. L. Smart's residence, when members inspected the vineyard and hay and pea crops. A demonstration of chaff cutting was also given by Mr. Smart.

On December 12th an address, "The Use and Abuse of Explosives," was given by Mr. J. Potter, of the Clarendon Agricultural Bureau.

RAPID BAY.

December 11th.—Present: 21 members.

RABBIT DESTRUCTION.—In the course of a paper dealing with this subject Mr. H. Hamlyn said the first work in preparing to clear rabbits off the land should be to clean up all bushes or any other rubbish that would serve as a harbor for vermin. All natural burrows, such as rock holes and caves should be blocked with wirenetting or stonework. Hollow logs or trees should be blocked up or destroyed. The only way to rid a hilly district of rabbits was to use ferrets, and fill in the burrows behind them. If that was repeated several times, very few rabbits would be found. All that was required for the work was one man with 12 ferrets (six being used on each alternate day), four or five dogs, a dozen string nets, rifle, and pick. That equipment would be sufficient to cope with a 5,000 acre holding. When picking in the burrows, all branch holes should be securely blocked. By watching the burrows and treating them in that manner for a week or two, the rabbits could be easily kept under control. A very interesting discussion took place, and some members considered that the best plan was to use the poison cart first to thin down the rabbits, and then work ferrets.

ROCKWOOD.

December 8th.—Present: 15 members.

MIXED FARMING.—Mr. H. Hodgson, who read a paper dealing with this subject, said mixed farming in that district was a rather difficult form of agricultural operations because the quality of the land varied considerably. So far as the working of the land was concerned, he thought that a portion of the block should be fallowed in September. The fallow should be cultivated once before harvest and harrowed if infested with sorrel. If summer rains fell, the land should be harrowed the next day. It was not profitable to grow the same kind of crop two years in succession on the same piece of land. It was better to sow the stubble land with oats and barley mixed for stockfeed, or, failing that, Ford wheat could be sown in June as a second crop. A few cows should be kept, but most of the farms lying back from the River Finniss and Black Swamp were not suitable for commercial dairying. Ewes and lambs would pay better. He suggested mating well-grown Lincoln-Merino ewes with a Dorset ram. Care should be taken not to overstock! The ewes should lamb in May, and if provided with good feed, the lambs would be ready for market in four months. The ewes should be shorn in September and fattened, and all old and undesir-

able ewes should be culled from the flock and replaced with younger animals. A few cows could also be bred and fattened for marketing. A portion of the cropping area should be devoted to peas and barley for pigfeed. Poultry would also be found a good sideline, because there was a good margin of profit between the selling price of grain and the money received for eggs and table poultry. He recommended the heavy breeds, such as Rhode Island Reds or Indian Game crossed with the Rhode Island Red, but for egg production the White Leghorn was best. Where cows and poultry were the main sidelines, the speaker considered it a good plan to grow a small crop of Sudan grass, and for late lambs a few acres of rape served as good summer feed. Special attention should at all times be paid to the vegetable garden, because that was the best-paying proposition on a mixed farm. In the discussion that followed, Mr. H. Dunn did not advocate sowing oats on fallow land, because they grew too rank. He preferred to sow wheat on fallow, and oats on stubble. He thought it would be a better paying proposition to top dress pasture lands and forego farming operations altogether in that district.

STIRLING.

December 6th.—Present: eight members.

STRAWBERRY CULTURE.—In the course of a short paper dealing with this subject Mr. G. Probert stated that English varieties of strawberries were not grown successfully in Australia, because they did not carry sufficient foliage to protect the fruit from the rays of the sun. For general purposes he favored Madame Melba, for commercial growing the Billabong, and for private gardens the Ettersburgh. The life of the strawberry plant was three years. The plants should be set out in rows 2ft. 6in. apart and 1ft. in the rows. In regard to manuring, Mr. Probert advised using a mixture of two-thirds bone dust and one-third lime. He also stated that when a strawberry was washed it lost its flavor. In the discussion that followed, Mr. Noble inquired how long it took seedlings to bear fruit, to which Mr. Probert replied one year. The following varieties of strawberries were tabled by Mr. Probert:—Ettersburgh, White Alpine, Pink Chilian, Scotch Giant, Gandy, and Billabong.

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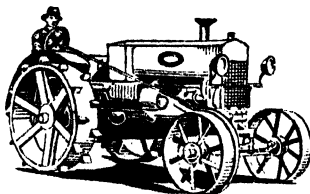
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STIRLING.

January 10th.—Present: 10 members.

GLADIOLI CULTURE.—Mr. M. Bilney, who gave a short address on this subject, said that gladioli had come into prominence lately, for which he assigned several reasons. The plants were easily cultivated, there were a large variety of colors, and the flowers lasted a week or 10 days after being picked. Plants could be propagated in four ways:—(1) From the increased corms; (2) from cormlets which formed at the base; (3) from seeds; and (4) by dissecting the corms. If the plants were propagated by dissecting, care should be taken to see that each section had an eye. In speaking of varieties, Mr. Bilney said that the finest varieties on the market were those raised in South Australia. He had brought several varieties from England, but had discarded them as failures. In order to get a continuance of blooms Mr. Bilney favored planting at intervals of a fortnight. Blooms could then be obtained from October to May. Several varieties were described by the speaker, and lists were given of the best exhibition and garden varieties. A splendid discussion followed, in which Messrs. Oldfield, Hocking, Noble, Mountford, Gander, and Probert took part. In speaking of discarding English varieties, Mr. Mountford said that possibly sufficient time was not given for them to become acclimatised, and instanced a case in which Australian varieties had failed in England.

BALHANNAH, January 9th.—Twenty-three members attended the January meeting when a paper, "Fruit Drying," was contributed by Mr. C. Grasby.

CURRENCY CREEK, November 14th.—Mr. Geo. Ritchie read a paper, "Pig Raising for Profit," which brought forward a keen and interesting discussion.

At a further meeting, held on December 12th, the Hon. Secretary (Mr. D. Gordon) read an article, "Export Lambs," and an interesting discussion followed.

McLAREN FLAT, January 8th.—Capt. S. A. White, C.M.B.O.U. (Vice-Chairman on the Advisory Board of Agriculture), delivered an address illustrated with lantern views, "Across Australia."

RAPID BAY, January 10th.—Mr. A. Bennett read an instructive paper, "Co-operative Marketing," which aroused a keen discussion.

SOUTH-EAST DISTRICT.**KONGORONG.**

January 5th.—Present: 12 members and eight visitors.

POULTRY ON THE FARM.—Mr. W. Aslin, who read a paper dealing with this subject, said the Kongorong district was especially suitable for poultry raising, because the soil was of a sandy nature, and contained a large proportion of grit. He had tried many breeds of fowls, including White Leghorns, Wyandottes, Barred Rocks, Rhode Island Reds, Black Orpingtons, and after giving them all a fair trial, had come to the conclusion that a heavily feathered, hardy fowl was the best for the district. Three or four years ago he sold off all the birds except the Black Orpingtons, and bought some cockerels of a proved laying strain, and they had been most profitable. Each year he hatched about 300 chickens, nearly all the pullets were kept and the cockerels sold when they were about six to eight months old, whilst all hens over two years old were culled. All hens that developed broodiness after the beginning of August until December he endeavored to set, because he had found that the best layers only had a short period of broodiness. The fallen needles from pine trees made excellent nests. The pen should not be disturbed until the chicks had been hatched at least 12 hours, after which they could be moved into a portable coop with a small scratching yard attached, which held the mother but allowed the chickens plenty of freedom. The chickens were kept in the brooder for a fortnight to a month before they were permitted to roam at large. The small chickens were fed entirely on cracked wheat, but as the young birds grew, the grain was mixed with oats and boiled potatoes, and when time permitted a mash of equal parts of bran and pollard could be given. If properly fed and looked after, the pullets would start to lay when they were about five months old, and would keep on right through the winter months. During the cold weather a meat ration was necessary, for which he used boiled rabbits. Eggs should be gathered

at least once a day and kept in a cool place. One rooster was quite sufficient for the ordinary farm flock of poultry, and it should be confined in a yard with from six to nine selected hens. Only medium-sized good-shaped eggs should be set, and any hen found not laying such or with any other fault should be put out of the pen and another one substituted. Plenty of good, fresh water should be provided, and for birds kept in an enclosure, a supply of shell grit was necessary. Turkeys could be reared very profitably in that district. The Bronzewing was the best breed, they matured quickly, and developed into large birds. Great care should be taken with young turkeys, because a sudden cold change killed them very quickly. Pollard mash with greenstuff was the best food for them. Ducks could also be raised profitably, but they were a continual source of annoyance in the stables and about the farm buildings.

MOUNT GAMBIER (Average annual rainfall, 32in.).

December 13th.

FRUIT TREES.—Mr. J. Guerin read the following paper:—"There are various methods of treating different trees for the purpose of making them produce the greatest and best yields. Tree growing is a study in itself, and it is better to leave a tree alone than treat it improperly. If the owner has no previous experience I advise him to consult an orchardist. Careful pruning is one of the most important processes connected with the proper treatment of young trees. Care should be taken to see that the surrounding soil is well stirred, and that grass and weeds are not allowed within 3ft. of the trees. Young trees should not be planted within 10ft. of an evergreen hedge. Trees should be pruned every year, if possible, because if they are left for two or three years, much of the year's fruit has to be cut off in the effort to bring them back to proper shape. Pruning can be commenced as soon as the leaves on trees bearing an average amount of fruit shows signs of yellowness. Of the trees which do not bear fruit and have become 'wood' I advise their being cut back very heavily in mid-summer, but great care should be exercised where and how they are cut. I advocate summer pruning in the case of trees that have been allowed to grow too much wood, especially the peach and apricot. This operation can be carried out as soon as the fruit is gathered. The correct time to treat an unhealthy fruit tree is when it has just been pruned. The tree should be sprayed with a strong winter mixture. The tree is then dormant, and it should be sprayed again with a weaker mixture when the buds are swelling, and the third spraying should be given when the fruit has set. There are numerous diseases peculiar to different varieties of fruit trees, which, if left unsprayed, will result in unclean fruit. Weather conditions play an important part with spraying, and I advise the deferring of spraying operations in the winter time until the day following a frost. The reason for this is that at that time most insect life, through adverse temperature, is on the surface of the large branches. An endeavor should be made to avoid spraying on a showery day. The method I adopt is to prune on a damp day and spray on a dry one. Some of the troubles requiring winter spraying are:—Curl leaf (peach and nectarine), shot hole (apricot), black spot (walnut, pear, and apple). I have found that many trees leave the nursery with too many wood roots, especially pears and plums, and in many cases in Mount Gambier during the last 12 months, where I have taken roots from 20 different kinds, the result has been that the trees are bearing fruit. I favor summer pruning in preference to winter pruning, especially on trees that make too much summer growth. As regards spraying, I advise growers to use only a mixture that has proved itself effective against codlin moth, which has proved itself absolutely the most destructive insect throughout this town and district so far as fruit growing is concerned. Spraying with Paris green at least three times during the growing season when the fruit is just forming, and continuing at intervals (not forgetting a spraying about the middle of January) is recommended, because the most damage is done by the third laying of the moth which takes place at about that time when the fruit is approaching a ripe condition." In discussing the paper Mr. H. H. Orchard (Orchard Instructor and Inspector) said Paris green was not equal to arsenate of lead for spraying fruit trees. Mr. Guerin, in reply to a question by Mr. Smith, said that the best spraying mixture for shot-hole or curl leaf was 6lbs. of bluestone and 8lbs. of lime mixed in 150galls. of water. Mr. E. W. Tollner gave a brief report of the Kybybolite Experimental

Farm visiting day. He had never seen the farm look so well as it did this year, and the improvements made since last year were really wonderful. The Ayrshire herd was a splendid one, but a little more culling would benefit it. The lucerne crops were equal to anything he had seen in the South-East, but the feature of the visit had been the numerous illustrations of the benefit derived from top dressing. Top dressing had made Kybybolite, and other farms, seeing the good it had done, had followed the example, and, as a result, the district was becoming more prosperous every season. He did not think that the value of such a farm was realised. Mr. R. W. Smith supported. He also had been interested in the top dressing. He had also noticed that the crops were sown down with subterranean clover, and, after the crop was cut, there was left a beautiful grazing paddock. All the crops had an abundant growth of grass underneath, and he considered that pastures could be improved 50 per cent. by top dressing. Mr. A. A. Kilsby said that he had visited Heywood on the occasion of the visit of the better farming train. There had been splendid exhibits of stock and produce, and lectures had been given.

KALANGADOO, December 13th.—A report of the tour of inspection of top-dressing experiments being conducted in the Adelaide Hills districts by the Superphosphate Association was read and discussed.

A further meeting was held on January 10th, when a paper, "Bee Culture," was contributed by Mr. Dowdell. Following a discussion on the subject "Worms in Lambs," Mr. F. Bott said dosing each lamb with 2oz. of a solution consisting of 30oz. of bluestone dissolved in 3galls. of water had proved an effective remedy.

MOUNT GAMBIER, January 10th.—The Assistant Dairy Expert (Mr. H. J. Apps) delivered an address, "Various Phases of the Dairying Industry."

NARACOORTE, November 8th.—Mr. A. Langeludecke read a paper describing a visit to Roseworthy Agricultural College, and an interesting discussion followed.

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T. BUTTERFIELD,

Minister of Agriculture.

INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

[Replies supplied by MR. ALAN H. ROBIN, B.V.Sc., Veterinary Officer, Stock and Brands Department.]

"W. S. V.," Cadell, has gelding rising seven years, sluggish, only able to work about half a day, horse does not fatten although fed on good fodder.

Reply—Examine horse's teeth, they may probably require some attention. Give a good dose of physic, such as, raw linseed oil $1\frac{1}{2}$ pints, turpentine 2oz., or an aloes physic ball (the latter would be preferable). Subsequent to the action of the physic working off, feed on good feed, and supply rock salt for a lick. Have the following medicine made up:—Pulv. nux vomica 3oz., pulv. ferri. sulph. 3oz., pulv. radii. gentian 6oz. Give one heaped tablespoonful night and morning immediately after feeding. Mix the dose in a little treacle to make a stiff, sticky paste, and smear it on the back teeth and tongue with a piece of flat stick, so that the horse has to lick it down.

"W. T.," Coomandook, has cow about $2\frac{1}{2}$ years of age. Few weeks after calving developed stiffness in front legs. Appetite and milk normal, although the back is "rounded up."

Reply—I would recommend that you get a supply of ground sweet bonemeal from the Adelaide Chemical & Fertilizer Co., Currie Street, Adelaide, and if manger fed, give her three or four tablespoonfuls four or five times a week mixed in the feed, together with 1oz. to $1\frac{1}{2}$ oz. daily common salt. If not manger fed, mix the bonemeal and salt in equal proportions, and put it in a box near water trough so the cow can have free access to it.

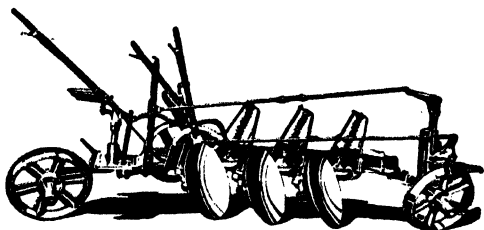
"H. C. P.," Honiton, reports pony with lump shape and size of small egg on neck. Also asks if advisable to purchase horse with a lump on the navel.

Reply—The most satisfactory way to get rid of the lump would be by operating and cutting it out. It is simple and not dangerous. It is not wise to buy horses which have a rupture at the navel. There is always the danger of the condition becoming aggravated by severe strain, especially in breeding mares, or the enclosed bowel may become strangulated, and set up a fatal colic. However, the condition, if not very large, can always be satisfactorily relieved by operation by a qualified veterinary surgeon.

"J. A. B.," Oaklands, has several young rams, nine to ten months old, slowly losing condition. Large, puffy swelling under jaw.

Reply—The rams appear to be troubled with stomach worms. If you could send us one of the fourth stomach (that portion immediately behind the bible) and contents, packed in some 5 per cent. formalin solution, we would from it be able to definitely determine the point. To treat for stomach worms, drench the sheep every three or four weeks with a 1 per cent. solution of bluestone (copper sulphate). A 1 per cent. solution is made by dissolving $\frac{1}{2}$ lb. bluestone in 1gall. boiling water, and adding cold water to make up to 3galls. The dose is:—For sheep under one year old $1\frac{1}{2}$ oz., for sheep over one year old 3oz. Subsequent to drenching, feed on good rich food carefully for a start till they become used to it, and supply the following lick, which should be constantly available to the rams:—Common salt 50 parts, phosphate of lime 20 parts, sulphate of iron 3 parts.

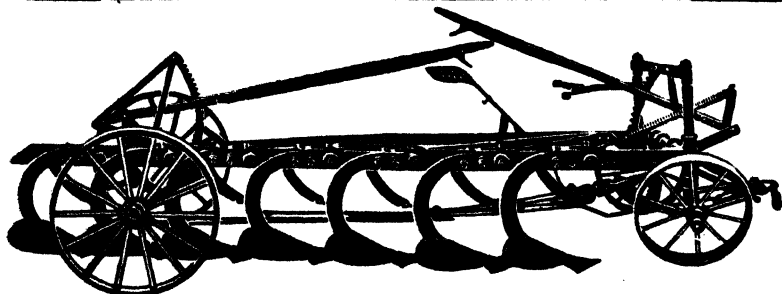
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THE INFLUENCE OF A HIGH GRADE SIRE.

[By W. J. COLEBATCH, B.Sc., M.R.C.V.S., Principal, and R. BAKER, Diploma R.A.C., Lecturer on Dairying, Roseworthy Agricultural College.]

It is the ambition of all progressive breeders of dairy stock to possess a high class bull that will stamp the best characteristics of his ancestors on his progeny. The search for this exceptional animal, however, is more often fruitless than successful, as the breeder has usually to rely almost entirely on the breeding record of the sire and the yield records of the dam and her close relatives. Even when the performances of the progeny of the sire and of the dam are also available the task of the selector is by no means a simple one. He is still liable to blunder through choosing a bull which, though pleasing in general appearance and of excellent lineage so far as production is concerned, is lacking in prepotency and therefore deficient in the very quality that should be the outstanding feature of the head of the herd.

Although but a small number of breeders succeed in discovering a highly prepotent bull of the right type and pedigree, it cannot be inferred that such animals occur infrequently. It is, however, highly probable that many such animals are overlooked. In some cases they fail to attract notice because of some physical defect or the inheritance of features that are unfashionable with local breeders. In others, again, they are used as stud animals for a season or two, but are not retained long enough to permit of the standard of their progeny being gauged. Most breeders have at some time or another had the mollifying experience of discovering the stud value of an exceptional sire after the said animal had gone beyond recall, and I am afraid that many another valuable stud bull is destined in the future to go to the shambles instead of being allowed to hand on to future generations the wonderful combination of characters with which he has been endowed. The reason for this is twofold:—

1. Breeders generally have not yet lost confidence in the arguments relied upon by those who aim to discourage close breeding. Even many who would hesitate to admit it are hampered in their operations by a lingering fear that some calamity in the form of sterility, loss of vigor, or diminution in size may overtake them if they venture to intensify the best strains by judicious inbreeding. Evidence of this is seen in the general practice of discarding sires as soon as their daughters are eligible for admittance to the breeding herd, notwithstanding the fact that the stud value of the sires has not been determined. That inbreeding, if persisted in when the indications are strongly opposed to continuation of the practice, will be followed by disastrous consequences is not denied, but in the hands of skilful and observant men it offers the surest and shortest road to success in stock improvement. No capable stockman should be deterred from using it by overdrawn accounts

of the pernicious effects that are liable to result. In fact it is not overstating the position to say that no enterprising breeder of dairy stock, the economic value of which can be measured in precise terms, can afford to ignore the advantages which this potent instrument affords. Were it not for this widespread adherence to the policy of restricting operations to line-breeding, or some still wider system, many a young bull would be retained another season or two until its breeding worth had been revealed. In some cases stud breeders, being unable to test all their own bulls, hire or loan them out and so keep control of them until such time as their heifers have completed a lactation period. No doubt much more might be done in this way to prevent the loss of bulls eminently fitted to improve our dairy herds.

2. The second reason is the length of time taken to secure the evidence on which the stud value of a bull may be accurately assessed. Normally, a bull will be, approximately, five years of age when his daughters are completing their first lactation period, and as a rule their records may be accepted as a fair criterion of his value as a dairy sire. In doubtful cases it may take another year to decide the matter, but in the great majority of instances if a yearling bull be mated with cows of known capacity the dairy qualities of his first season's progeny will furnish a reliable and trustworthy guide as to his capacity for throwing high grade calves. The importance of definite information from a practical demonstration of the animal's breeding value is sufficiently obvious, and a "tested" bull would naturally command a higher figure than one whose prospective value rests solely on the performances of near relatives and the concentration of reputable strains as disclosed in the pedigree. The time occupied in the investigation, however, is a lengthy one, and in view of the possibility of discouraging results being obtained very few owners of dairy cattle undertake it. It is against the interests of the community, however, to allow these exceptional animals to be slaughtered, and sooner or later steps will be taken to see that pedigreed bull calves by a proved bull out of high recording dams are put through a breeding test before their fate is decided.

That there are difficulties to overcome in designing a scheme to check the present wastage is quite clear, but we do not consider them insuperable, and having regard to the low average yield of dairy produce per cow in this State, as shown in the statistical returns, the problem is one that demands attention.

Those who have been fortunate enough to breed or acquire a bull of outstanding merit as a stud breeder are not likely to part with him, but it does not follow that they know how to make the best use of the opportunities which such an animal offers. Many will be content to rear as many half-bred calves as possible, disposing of the bulls and retaining the heifers. By so doing the good influence of the sire is certainly distributed through one or two generations, but in the course of a relatively short space of time the process of dilution will have reduced the percentage contribution of such a bull to an insignificant figure, and the

influence of the exceptional animal will thus be lost again. Is not intensification of the blood of equal, if not greater, importance than its rapid dissemination through all branches of the herd? In other words, is it not the duty of the fortunate possessor of such a bull to preserve the type and seek to improve it by rational inbreeding and selection on a breeding test basis? It seems to us that bulls of proven breeding capacity should be mated with their dams, daughters, and granddaughters with the object of simplifying the blood and establishing a reservoir of concentrated plasm capable of giving rise to a uniform strain of heavy yielding cattle. By this means a supply of prepotent bull calves of superior grade would also be assured, and instead of the good qualities of the original sire being scattered and eventually lost they would be retained and utilised in the best interests of the owner's herd as well as of those to whom tested sires are transferred. Purchasers of non-tested bulls from such a source would be less likely to experience disappointment, and the owner would be much more likely to produce animals of still greater merit.

Many instances are quoted by writers on this subject of the influence of a good sire in raising the standard of production in a dairy herd, but in our own State very few records have been cited. It may be of interest, therefore, to quote the results obtained in the College herd which consists of pure and grade Jerseys. Situated in a district with a 17½ in. rainfall, about two-thirds of which falls in the winter, this herd is deprived of the pleasure of grazing on succulent pasturage in the summer. The deficiency is made good to some extent by feeding silage liberally in the byres, but trough feeding will never produce the same contentment of a mind and deep milk flow as a field of rich herbage. The yields quoted, therefore, are apt to suffer by comparison with herds located in the dairying centres. They serve, however, to illustrate the influence of the sire under Roseworthy conditions, and it may fairly be assumed that the figures would be not less striking had the data been gathered under more favorable circumstances.

For the purpose of this inquiry we have compared in every instance the yield of a cow on her first calf with that of her daughter at the same stage, namely, at the conclusion of the first lactation period. In the appended tables these have been grouped according to the sire of the daughter under test:—

TABLE I.—*Showing Influence of Sire—Blyth, 1700 A.J.H.B.—on the Producing Qualities of his Progeny.*

Dam.	Daughter.	Total Milk.	Average Test.	Total Butter-fat.	Official Standard.
		lbs.	%	lbs.	lbs.
Roseworthy Princess II.	—	3,848½	5·83	224·36	225
	Roseworthy Princess V...	3,348½	5·13	171·77	200
Annabelle I.	—	5,292	4·90	259·31	200
	Annabelle II.	3,446	4·57	157·48	200

TABLE II.—*Showing Influence of Dark Antimony of Turretfield, 1698 A.J.H.B., on the Producing Qualities of his Progeny.*

Dam.	Daughter.	Total Milk.	Average Test.	Total Butter-fat.	Official Standard.
		lbs.	%	lbs.	lbs.
Roseworthy Princess II.	—	3,848½	5.83	224.36	225
	Roseworthy Princess IV.	4,582½	5.11	234.16	200
	Roseworthy Princess VI.	6,381	5.84	372.65	225
Roseworthy Princess III.	—	3,369½	4.89	164.76	200
	Roseworthy Princess VII.	5,914½	5.41	319.97	225
Nan II.	—	3,435	6.63	227.74	250
	Nan III.	6,220	5.48	340.85	250
Eva I.	—	4,329½	4.66	201.75	250
	Eva II.	6,632	5.10	338.23	225
Pearl I.	—	4,296	4.51	193.74	225
	Pearl II.	5,178	5.04	260.97	225
Beryl I.	—	3,801	5.08	192.09	200
	Beryl II.	6,626	5.11	338.58	225
Chummie III.	—	5,721	4.63	264.88	225
	Chummie IV.	4,352½	5.07	220.67	200
Annabelle I.	—	5,292	4.90	259.31	200
	Belle I.	4,402	5.56	244.75	200
Sunshine I.	—	5,088½	5.58	283.94	250
	Sunray I.	4,093	4.99	204.24	200

TABLE III.—*Showing Influence of King Solomon of Dalcbank, 1699 A.J.H.B., on Producing Qualities of his Progeny.*

Dam.	Daughter.	Total Milk.	Average Test.	Total Butter-fat.	Official Standard.
		lbs.	%	lbs.	lbs.
Roseworthy Princess IV.	—	4,582½	5.11	234.16	200
	Roseworthy Princess VIII.	7,096½	4.69	332.82	200
Roseworthy Princess V....	—	3,348½	5.13	171.77	200
	Roseworthy Princess IX.	4,987½	5.52	275.31	225
Belle I.	—	4,402	5.56	244.75	200
	Belle II.	4,920½	5.55	273.08	225
Topsy II.	—	4,009½	5.02	201.27	200
	Topsy III.	5,158	5.38	277.49	200
Sunshine I.	—	5,088½	5.58	283.94	250
	Sunshine II.	6,856½	5.30	363.29	200
Sunray I.	—	4,093	4.99	204.24	200
	Sunray III.	6,150½	5.01	308.14	200
Marie I.	—	4,371	4.63	202.37	200
	Marie II.	5,922½	4.89	289.61	225
Dinah I.	—	2,636½	5.13	135.25	200
	Dinah II.	5,458	5.34	291.46	200
Chummie III.	—	5,721	4.63	264.88	225
	Chummie V.	5,438½	5.70	308.99	225

TABLE IV.—*Showing Total and Average Differences in Yields from Dams and Daughters in their First Lactation Periods.*

Sire.	Daughter.	Increase or Decrease in—		
		Total Milk.	Average Test.	Total Butterfat.
		lbs.	%	lbs.
Blyth 1700 A.J.H.B.	Roseworthy Princess V. .	— 500	— 0.70	— 52.59
	Annabelle II.	— 1,846	— 0.33	— 101.83
	Average difference ..	— 1,173	— 0.51	— 77.21
Dark Antimony of Turret- field 1698 A.J.H.B.	Roseworthy Princess IV.	+ 734	0.72	+ 9.80
	Roseworthy Princess VI.	+ 2,532½	+ 0.01	+ 148.39
	Roseworthy Princess VII.	+ 2,545	+ 0.52	+ 155.21
	Nan III.	+ 2,785	— 1.15	+ 113.11
	Eva II.	+ 2,302½	+ 0.44	+ 136.48
	Pearl II.	+ 882	+ 0.53	+ 67.23
	Beryl II.	+ 2,825	+ 0.03	+ 145.49
	Chummie IV.	— 1,368½	+ 0.44	— 44.21
	Belle I.	— 890	+ 0.60	— 14.56
	Sunray I.	— 995½	— 0.59	— 79.70
	Average difference ..	+ 1,135.2	+ 0.02	+ 63.72
King Solomon of Dalebank 1699 A.J.H.B.	Roseworthy Princess VIII.	+ 2,514	— 0.42	+ 98.66
	Roseworthy Princess IX.	+ 1,639	+ 0.39	+ 103.54
	Belle II.	+ 518½	— 0.01	+ 28.33
	Topsy III.	+ 1,148½	+ 0.36	+ 76.22
	Sunshine II.	+ 1,768	— 0.28	+ 79.45
	Sunray III.	+ 2,057½	+ 0.02	+ 103.90
	Marie II.	+ 1,551½	+ 0.26	+ 87.24
	Dinah II.	+ 2,821½	+ 0.21	+ 156.21
	Chummie V.	— 282½	+ 1.07	+ 44.11
	Average difference ..	+ 1,526.22	+ 0.18	+ 86.41

It should be noted that all cows in the College herd are tested under more stringent conditions than are prescribed for the official testing of pure bred cattle. Every cow's milk is weighed at each milking throughout the 273-day period, and butter-fat readings are taken at fortnightly intervals. The official standards shown in the tables indicate the approximate ages of the heifers at calving.

Only two heifers by the bull Blyth have been retained in the herd, and both have failed to reach the 200lbs. butter-fat standard. Moreover, they show up very poorly when compared with their respective dams. Combining their records it will be seen that the milk yield was 234.6galls. and the fat yield 154lbs. less than was obtained from their dams.

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The record of 'Dark Antimony, of Turretfield, which was a grandson of the noted bull "Black Antimony," imported by Mr. A. J. Murray, is vastly different. Ten of his heifers are available for inclusion in this investigation, and seven of them show evidence of having inherited better milking qualities than their mothers. The other three—all of which were out of deep milking dams—show a distinct falling off, although they all succeeded in reaching the official standard. It would seem, therefore, that the good qualities of this bull were not always impressed on his progeny. He undoubtedly improved some strains, and the nett effect of his matings was to increase the milk flow by 113.5galls. and the fat yield by 63.7lbs. per heifer. However, he was apparently not quite prepotent enough to be classed as a reliable dairy sire, and in this respect he is easily surpassed by the third bull—King Solomon, of Dalebank.

King Solomon was purchased from Mr. L. T. Cowan, of Blakiston, as a calf, his sire being Makarini (imp.), a very impressive bull, and his dam the well-known "Queen of Sheba." There are 10 of his heifers on the farm, and all but one have completed their first lactation. Reviewing the milk yields, it will be observed that although in one instance there is a decrease of 28galls. the average increase is nearly 153galls. Attention is also directed to the fact that Chummie V., which gave 28galls. less milk than her dam, showed a much higher test—1.07 higher—and that this more than compensated for the small reduction in quantity of milk.

The butter-fat records of this bull's heifers are very striking. In every instance there has been an appreciable increase, the lowest being 28.33lbs. (Belle II.) and the highest 156.21lbs. (Dinah II.). The average increase for this group works out at 86.41lbs., and allowing for a 16 per cent. "overrun" this represents slightly more than 100lbs. of commercial butter extra per head. Valuing it at 1s. 6d. per lb. the additional revenue is £7 10s. per head, or £67 10s. in one lactation period from the line of nine heifers. It is this type of animal that should be bred to his own progeny for the purpose of raising bulls and heifers with 75 per cent., 87½ per cent., or even 93½ per cent. of the sire's blood in their veins.

It is hoped that this series of data will lead others to measure the influence of their bulls in a similar manner and to publish the figures so that breeders generally may become impressed with the importance of using sires of proven capacity.

The facts disclosed should also be the means of directing attention to the Government scheme for subsidising the purchasers of pure bred bulls. This scheme is growing in favor and is destined to become a very potent factor in the improvement of our dairy herds. It enables even small dairymen to secure a bull from a pronounced milking strain, and in due course it will bring within their reach stud animals that have passed the breeding test and qualified as sires of exceptional merit.

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THIRD REPORT OF THE DAIRY HERD OF AYRSHIRE COWS AT THE KYBYBOLITE EXPERIMENTAL FARM.

OCTOBER 1ST, 1923, TO SEPTEMBER 30TH, 1924.

[By L. J. Cook, Manager.]

A few seasons ago some representative types of pedigree Ayrshire and grade Ayrshire cattle were purchased from various noted herds in Victoria for the Kybybolite Farm. These formed the nucleus of a herd to test the possibilities of the district for dairying. The natural climatic conditions led to the choice of this hardy Scotch breed of milking cows, and they are continuing to prove that they can withstand the comparatively cold and wet winter conditions very well, and their natural habit as good foragers enables them to secure the most from the gradually improving pastures of Kybybolite.

Since 1921 careful records of milk supply, tests, and feeding have been kept regularly, and this report deals solely with results obtained from cows bred and reared on the farm, and which therefore have known no other conditions than those existent at Kybybolite.

Table 1 shows the monthly production during the last 12 months for all cows in the herd that were bred and reared at the farm.

TABLE 1.—*Statement showing Total Production by Ayrshire Cows (bred and reared at Kybybolite Experimental Farm) for 12 months ending September 30th, 1924.*

Month.	Average Cows under Test.	Average Cows in Milk.	Average Butter-fat Test.	Milk.		Butterfat.	
				Produced by Herd.	Per Cow.	Produced by Herd.	Per Cow.
1923-24.	Cows.	Cows.	%	Lbs.	Lbs.	Lbs.	Lbs.
October	24.9	22.5	4.34	16,638	668.19	722.55	29.02
November	25.7	23.2	4.11	17,004	661.63	698.78	27.19
December	26.0	23.8	4.20	15,512	596.62	652.03	25.08
January	26.0	23.3	4.15	13,960	536.92	579.57	22.29
February	25.0	21.6	4.31	10,275	411.00	442.76	17.71
March	24.0	18.5	3.97	9,398	391.58	373.22	15.55
April	24.5	17.5	4.32	8,501	346.98	367.38	15.00
May	24.7	18.2	4.21	8,334	337.41	350.70	14.20
June	24.0	19.3	3.91	8,881	370.04	347.63	14.48
July	24.0	18.8	3.89	9,623	400.96	373.97	15.58
August	24.0	17.6	3.84	11,437	476.54	438.88	18.29
September	27.2	20.1	3.89	14,030	515.81	545.79	20.07
Means	25.0	20.37	4.10	—	5,713.68	—	234.46
Total production for year				143,593	—	5,893.26	—
Average daily production				392.33	15.61	16.10	0.64

These results have been obtained from cows on their first, second, and third lactation periods. During the 12 months, 12 cows completed their first lactation period, seven cows completed their second, seven completed their third, and one finished her fourth period, whilst seven other heifers started their first period.

The general average return of 571galls. milk and 234lbs. butter fat per cow for the year can be regarded as very fair, but, considering that we experienced a much milder winter than usual, it was expected that the average would have been increased, instead of slightly decreased on the previous season's results. The average period of dryness of each cow was 67 days, a slight improvement on the previous season of 71 days' average. The average butter fat of 4.10 per cent. is a slight improvement, but the average daily production of butter fat was reduced from 0.65lbs. to 0.64lbs.

The disposal of our dairy products at present is perforce confined to the sale of cream for butter making, and the utilising of skim milk in pig raising. For the 12 months under review the prices received for butter have been low, and the actual average price received at the farm for each month is as follows:

1923.	s.	d.	
October	1	1.79	per lb.
November	1	0.55	"
December	1	3.65	"
1924.			
January	1	3.57	"
February	1	3.56	"
March	1	2.19	"
April	1	1.01	"
May	1	3.16	"
June	1	2.48	"
July	1	3.09	"
August	1	2.45	"
September	1	2.31	"
Mean	1	2.48	"

Allowing for 15 per cent. overrun, we find that we received 6,777lbs. commercial butter from the cows in the herd. This, at 1s. 2.48d. per lb., equals £408 17s. 7d. Add the value of skim milk, 12,886galls., which at 2d. equals £107 7s. 8d., makes a total value of £516 5s. 3d. received from the 25 cows (average number in the herd for the 12 months), or a return in cash of £20 13s. per cow.

FEED.

A careful record of feed given to cattle on the farm has been kept, and the average quantities fed to each milch cow, together with fair estimated market values, are shown in the next table.

TABLE 2.—Average Feed Consumed per Milk Cow at Kybybolite Experimental Farm for 12 months ending September 30th, 1924.

Variety.	Quantity.	Price.	Value.
			£ s. d.
Hay chaff	13cwt. 1qr. 24lbs.	@ £4 per ton	2 13 10
Greenfeed	1 ton 2cwt. 1qr. 19lbs.	@ 10s. per ton	0 11 3
Ensilage	1 ton 12cwt. 1qr. 6lbs.	@ £1 per ton	1 12 4
Mangels	8cwt. 1qr. 23lbs.	@ £1 per ton	0 8 5
Bran	24bush.	@ 1s. 7d. per bushel	1 18 0
Oats (crushed)	29bush.	@ 3s. per bushel	4 7 0
Pasture	½ acres.	@ 4s. per acre rent	0 16 0
Total value of feed per cow			£12 6 10

During the year the herd was necessarily a good deal hand fed to supply concentrates, and make good the shortage on the pastures, and the foods used were mostly produced on the farm. The bran and some grain were purchased, and needed on account of the very poor grain harvest of 1923. Some crushed peas and barley that were available were fed to the cows in correct mixture with hay and ensilage to form a balanced ration. However, as oats are the cheaper grain, and the one that ordinarily would be used, all grain fed was calculated weight for weight, and was equal to 29bush. oats per head, as shown in above table.

For bulk feed a fair quantity of greenfeed was available this season, together with a quantity of mangel roots grown on the irrigation area, and these were fed in conjunction with the usual supply of ensilage and hay chaff, the mangels being utilised after the supply of ensilage gave out.

Approximately, the milking herd obtained half its bulk feed from growing pastures during the year. Calculating that ordinary pasture of the district carries at the rate of three-quarters of a sheep, or 75lbs., live weight of stock per acre, and allowing 600lbs. as the average live weight of young cows, I have therefore allowed an estimated acreage of four per cow for pasture, and have charged the rate of 4s. per acre as rent against each cow.

During the winter, from May 1st to September 30th, all milk cows were housed over night.

Full details of balancing accounts for the herd are not included in this report, but the balance left, £8 6s. 2d. per head, after subtracting cost of feed from value of produce received, should cover cost of labor and upkeep of plant.

The following table shows the average returns from the dairy herd for the past three seasons:—

TABLE 3.—*Average Returns from Ayrshire Dairy Herd, Kybybolite, 1921-24.*

Year.	No. of Cows.	Milk Yield per Cow.	Average Test.	Butter-fat Yield per Cow.	Price.	Gross Return per Cow.	Value of Feed per Cow.	Net Return per Cow.
		lbs.	%	lbs.	s. d.	£ s. d.	£ s. d.	£ s. d.
1921-22	10-15	5,715	4-36	245	1 1-3	19 13 7	9 11 0	10 2 7
1922-23	18-50	5,934	3-98	238	1 4-58	23 5 5	11 18 0	11 7 5
1923-24	25-00	5,714	4-10	234	1 2-48	20 13 0	12 6 10	8 6 2
Means .	17-88	5,788	4-15	239	1 2-79	21 4 0	11 5 3	9 18 9

THIRD REPORT OF THE DAIRY HERD OF AYRSHIRE COWS

Following is a list of individual records of the cows that have completed lactation periods during the past three years:—

TABLE 4.—*Showing Returns from Individual Cows that Completed Lactation Periods between October 1st, 1921, and September 30th, 1924.*

Name.	Birth Date.	Calving Date.	Days Tested.	Milk Yield.	Average Test.	Butter-fat.	Milk last Day.
				lbs.	%	lbs.	lbs.
Countess of Kybybolite . .	8/6/19	13/10/21	273	6,060	4.59	278.23	13
		15/10/22	259	6,975	4.49	313.29	—
		5/10/23	270	6,755	4.29	289.71	—
Blanche of Kybybolite . . .	16/12/18	20/6/21	273	4,925	4.28	210.89	8
		14/7/22	273	7,116	4.26	302.95	11
		5/10/23	273	8,676	4.06	351.62	4
Ruby of Kybybolite	12/7/19	11/6/21	273	5,201	4.33	225.42	6
		8/6/22	273	6,126	4.20	257.12	6
		19/7/23	241	6,103	4.28	261.16	—
Maggie of Kybybolite . . .	15/11/19	26/6/21	273	4,900	3.99	195.63	11
		22/11/22	252	5,106	3.77	192.27	—
		1/11/23	273	6,962	3.70	257.54	5
Lola	6/9/19	25/11/21	273	4,607	4.29	197.78	12
		17/11/22	273	6,041	3.97	239.81	2
		13/12/23	242	4,012	4.10	164.51	—
Duchess of Kybybolite . .	30/12/17	20/4/20	273	4,670	—	—	—
		9/4/21	266	4,175	4.88	203.68	—
		13/3/22	237	4,492	4.45	199.96	—
		19/4/23	249	5,370	4.19	224.77	—
Lily	10/2/19	25/8/21	273	4,022	4.34	174.56	—
		23/8/22	242	5,190	3.81	197.80	—
		20/7/23	265	4,967	3.96	196.70	—
Rose of Kybybolite	19/11/19	1/6/22	273	6,804	4.07	277.19	19
		4/6/23	273	6,647	3.73	247.62	13
Joan	23/4/19	8/6/22	273	5,678	4.52	256.61	10
		7/6/23	262	5,334	4.02	214.31	—
Betty of Kybybolite	23/9/19	1/7/22	273	5,717	4.21	240.59	5
		21/6/23	218	4,249	3.56	151.26	—
Laurel	23/3/20	20/11/22	273	5,741	3.63	208.33	12
		27/11/23	260	4,641	4.26	197.78	—
Tulip	13/9/20	13/1/23	273	6,653	3.45	229.55	23
		2/1/24	273	4,141	4.07	168.59	6
Adela of Kybybolite	24/10/20	17/1/23	273	5,859	4.03	235.90	23
		19/1/24	236	3,489	3.86	134.55	—
Bertha	25/8/20	1/2/23	273	6,145	4.06	249.20	14
		6/12/23	273	5,838	4.00	233.23	7
Madge of Kybybolite	20/3/21	9/4/23	273	3,272	4.14	135.38	3
Chummie of Kybybolite . . .	1/5/21	26/5/23	273	4,039	4.41	177.98	—
Princess of Kybybolite . . .	9/4/21	9/7/23	273	3,861	4.42	170.75	—
Crocus of Kybybolite	30/6/21	24/7/23	273	5,077	4.11	208.75	11
Bianca of Kybybolite	18/8/21	9/9/23	266	3,126	4.09	127.96	—
Thisbe of Kybybolite	27/8/21	10/11/23	273	5,465	3.96	216.48	12
Meg	14/6/21	6/8/23	273	3,502	4.37	153.13	9
Mona	7/8/21	9/9/23	273	4,360	4.36	190.01	8
Wattle	25/6/21	19/10/23	273	6,012	4.13	248.07	8
Molly	25/8/21	18/10/23	273	5,994	3.82	228.83	15

By comparing the above with the values of Table 3, an approximate idea of the profitableness of each cow's work can be estimated. For instance, Countess of Kybybolite in the three years produced 1,979galls. milk, containing 881lbs. butter fat, and therefore has earned for us £77 9s. in butter and skim milk, or £25 16s. 4d. annually, whereas Lily, a much poorer cow, has in the three years produced 1,418galls. of milk, containing 569lbs. butter fat, earning £51 3s. 5d., or £17 1s. 2d. annually. Should these cows have consumed the average amount of food, then after paying for their food they have returned in money value £14 11s. 1d. and £5 15s. 11d. respectively. From this it can be seen that Lily has scarcely paid for the labor of handling, whereas Countess has returned a handy profit.

All the cows listed in Table 4. with the exception of three, were sired by "Anthony of Glencira." Laurel, Princess, and Meg were sired by "Sensation of View Hill."

My thanks are again due to Farm Stockman Mr. A. R. Rowe for his careful attention to the herd and his help in recording data.

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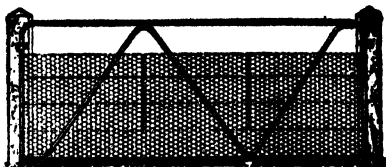


Fig. 132. Cyclone "N" Paddock Gate with round corners swung on face of posts. Can be had either rabbit-netted or with plain wires which make the gate sheep-proof.

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AGRICULTURAL EXPERIMENTS—REPORTS FOR THE YEAR 1924-1925.

[By W. J. SPAFFORD, Chief Agricultural Instructor, and
S. B. OPIE, Field Officer.]

EXPERIMENTS AT BUTLER.

[Conducted by Mr. C. F. Jericho].

In 1916, wheat-growing experiments were commenced in the hundred of Butler, having as their objects—(1) The discovery of the most profitable dressing of superphosphate to apply to wheat crops in this particular locality; and (2) a comparison of the returns secured from varieties of wheats on bare fallow.

MANURIAL PLOTS AT BUTLER, 1924.

The manurial plots were commenced in 1916, and are permanently pegged, so that each year that the blocks are sown with wheat, each plot will receive exactly the same manuring. This treatment does away with any chance of the plots receiving any benefits from residual fertilisers to which they are not entitled. The more often the plots are cropped the better will they show the effects of the different dressings of manure.

Below will be found the yields of grain received from the wheat grown in the manurial plots in 1924:—

Yields of Manurial Plots—Butler, 1924.

Plot.	Manure per Acre.	Bush.	lbs.
1. No manure		6	40
2. $\frac{1}{2}$ wt. superphosphate		10	32
3. 1wt. superphosphate		12	1
4. 2cwts. superphosphate		16	12
5. 3cwts. superphosphate		15	36

Gluyas wheat used in all plots at the rate of 60lbs. seed to the acre.

Yields of Manurial Plots—Butler, 1916-1924.

Year.	Yield per Acre.										Rainfall.
	Plot 1.		Plot 2.		Plot 3.		Plot 4.		Plot 5.		
	No		1cwt.		1cwt.		2cwts.		3cwts.		
	Manure.		Super.		Super.		Super.		Super.		
	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.	In.
1916	12	12	16	17	16	32	23	32	28	31	15.79
1917	13	30	20	36	23	23	27	48	29	46	20.78
1918	8	8	12	54	14	24	19	53	19	56	9.87
1919	10	14	12	26	15	9	16	42	17	59	10.93
1920	10	42	18	4	23	13	25	29	25	8	14.79
1921	13	27	14	50	16	37	19	11	18	16	19.08
1922	7	52	15	52	15	19	17	28	18	8	11.54
1923	9	13	19	13	22	45	23	36	21	47	17.53
1924	6	40	10	32	12	1	16	12	15	36	13.99
Means ..	10	13	15	38	17	43	21	6	21	41	14.92

The average returns for the application of various quantities of superphosphate very clearly show the need in the hundred of Butler of what are usually considered comparatively heavy dressings of this form of fertiliser. The following table, however, sets this out much more clearly, and distinctly shows that the use of manure for wheat growing is purely a business proposition—so much increased return for a given outlay. In the calculations, superphosphate is taken at 5s. per hundredweight, and wheat valued at 3s. 9d. per bushel:—

Increased Yields and Net Increased Value of Wheat from the Use of Superphosphate—Butler, 1916-1924.

Manuring per Acre.	Yields, 1916-24.		Increased Yields over no Manure.		Net Value of Increase. per Acre.	
	B.	L.	B.	L.	£	s. d.
No manure	10	13	—	—	—	—
½wt. superphosphate	15	38	5	25	0	17 10
1wt. superphosphate	17	43	7	30	1	3 1
2cwts. superphosphate	21	6	10	53	1	10 10
3cwts. superphosphate	21	41	11	28	1	8 0

WHEAT VARIETY TESTS AT BUTLER.

Besides the manurial plots mentioned above, Mr. Jericho is conducting wheat variety tests, each variety being sown on land that was in bare fallow, at the rate of 1bush. per acre with 2cwts. superphosphate. In the table arranged below will be found the yields from the wheat varieties grown at the hundred of Butler for 1920-1924:—

Yields of Wheat Varieties—Butler, 1920-1924.

Variety.	Yield per Acre.										Means, 1922-24.	
	1920.		1921.		1922.		1923.		1924.			
	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.		
Caliph	12	51	18	50	15	53	31	20	21	31	22	55
Ford	—	—	—	—	15	42	27	52	19	29	21	1
Gluyas	19	1	20	2	17	30	23	42	20	0	20	24
Late Gluyas . .	—	—	25	30	15	34	25	39	19	48	20	20
Felix	—	—	—	—	14	3	24	50	21	33	20	9
Sultan	—	—	—	—	13	56	25	42	20	12	19	57
Queen Fan . .	11	58	22	21	—	—	30	6	16	22	—	—
Major	—	—	—	—	—	—	25	3	—	—	—	—
Florence . . .	—	—	—	—	—	—	20	2	—	—	—	—
Currawa . . .	—	—	—	—	—	—	—	—	18	30	—	—
Rainfall . . .	14.79in.		19.08in.		11.54in.		17.53in.		13.99in.		15.39in.	

EXPERIMENTS AT SMOKY BAY.

[Conducted by Mr. E. Lovelock.]

At the request of the Smoky Bay Branch of the Agricultural Bureau a series of manurial experiments with wheat was arranged for that district, to be conducted in conjunction with the Department of Agriculture by Mr. E. Lovelock. The soils of this district consist mainly of calcareous sands, with the reputation of being so rich in phosphoric acid that the phophatic fertilisers are unnecessary for the production of maximum crops of the cereals.



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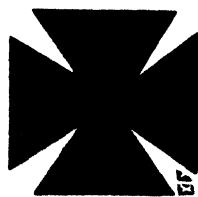
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An investigation of a sample of soil taken at the time of starting these plots showed on analysis:—

Total silica (SiO_2)	8.84 per cent.
Lime (CaO)	45.85 per cent.
Potash (K_2O)	0.019 per cent.
Phosphoric acid (P_2O_5)	0.085 per cent.
Organic carbon (C)	1.54 per cent.
Nitrogen (N)	0.094 per cent.
Manganese (Mn_3O_4)	0.010 per cent.
Chlorides (as sodium chloride)	0.016 per cent.

Since the above soil sample was submitted for analysis, a number of other samples were taken, and the most important mineral plant foods have been determined as follows:

Soil Samples from Smoky Bay, 1922.

Sample.	Description.	Depth In.	Phosphoric		Potash (K_2O) %	Lime (CaO) %
			Nitrogen (N) %	Acid (P_2O_5) %		
1.	Top of rise where soil is only about 5in. deep, and resting on limestone. Most crops grown here have been poor.	0-5	0.007	0.109	Nil	46.4
2.	Fair average soil of the district: has not been dressed with superphosphate for at least 10 years.	0-6 6-12	0.108 0.073	0.109 0.092	Trace Trace	43.7 44.9
3.	From bare patch which grows poor crops: has appearance of being old rabbit warren.	0-6 6-12	0.078 0.048	0.092 0.107	Trace Trace	45.0 45.8
4.	Fair average soil of district	0-6	0.113	0.106	Trace	42.8
5.	From fertile hollow	between 0-6	0.277	0.146	0.115	40.3
5B.	sandhills: similar hollows grow most crops really well.	6-12	0.210	0.180	0.150	40.4

These results show the average soil to be a calcareous sand, very deficient in potash, but, compared to average South Australian soils, comparatively rich in phosphoric acid and nitrogen, and so it was decided to arrange the trials with manurial dressings, as is set out below, conducting the experiments on the three-course rotation of (1) bare fallow, (2) wheat (manurial plots), (3) oats.

Manurial Experiments—Smoky Bay, 1924.

Plot.	Manuring per Acre.	Yield per Acre.	
		B.	L.
1.	1cwt. superphosphate	15	42
2.	$\frac{1}{2}$ cwt. superphosphate	13	44
3.	$\frac{1}{2}$ cwt. sulphate of potash	10	25
4.	1cwt. super and $\frac{1}{2}$ cwt. sulphate of potash	11	37
5.	No manure	11	38
6.	2cwts. superphosphate	16	9
7.	2cwts. super and 1cwt. sulphate of potash	16	19

Yields of Manurial Plots—Smoky Bay, 1922-24.

Plot.	Manuring per Acre.	Yield per Acre.			Means. 1922-24.
		1922.	1923.	1924.	
		B. L.	B. L.	B. L.	B. L.
1.	1cwt. superphosphate	19 19	14 15	15 42	16 25
2.	½cwt. superphosphate	18 55	15 49	13 44	16 9
3.	½cwt. sulphate of potash	14 35	15 40	10 25	13 33
4.	1cwt. super and ½cwt. sulphate of potash	18 39	19 43	11 37	16 40
5.	No manure	15 4	17 49	11 38	14 50
6.	2cwts. superphosphate	20 48	19 47	16 9	18 55
7.	2cwts. super and 1cwt. sulphate of potash	20 33	18 37	16 19	18 30

Rainfall 11.70in. 15.15in. 11.80in. 12.88in.

These experimental plots with wheat at Smoky Bay, as was to be expected from the analysis of the soils collected in the district, have already shown that the increases following the use of superphosphate are not nearly so great as are those received in practically every other district of South Australia. They have also shown that for some reason applications of potassic manures do not increase the wheat crops, despite the fact that the light soils of the district contain only a trace of potash when analysed, and as a matter of fact potash appears to have a depressing effect on the crops, which is possibly due to the fact that these potassic fertilisers delay the germination of the grain and considerably retard the early growth of the plants, from which set-back they are unable to recover. The following table sets out the financial aspect of these plots, allowing 5s. per cwt. for superphosphate, 18s. per cwt. for sulphate of potash, and 3s. 9d. per bushel for wheat.

Profit or Loss from Use of Manures at Smoky Bay, 1922-1924.

Manuring per Acre.	Yields 1922-1924.	Increase from Manure.	Value of Increase per Acre.	
			£	s. d.
No manure	14 50	—	—	—
½cwt. superphosphate	16 9	1 19	0	2 5
1cwt. superphosphate	16 25	1 35	0	0 11
2cwts. superphosphate	18 55	4 5	0	5 4
½cwt. sulphate of potash	13 33	*		*
1cwt. super. and ½cwt. sulph. of pot. . . .	16 40	1 50		†
2cwts. super. and 1cwt. sulph. of pot. . . .	18 30	3 40		†

*Decrease of 1bush. 17lbs. and extra cost of 9s.

†Loss of 7s. 2d.

‡Loss of 14s. 3d.

OATS AT SMOKY BAY, 1922-1924.

The oat crop is grown without fertiliser of any kind, so that there will be no residual effect of manure on the wheat plots when the land is next brought under the wheat crop; but the oat crop naturally receives benefits from any fertiliser which was not used by the preceding wheat crops, and as the yields secured from all the manurial

plots were kept separate, they serve to show the residual effect of the manures for this year, and are as follows:—

Oaten Hay Crop—Smoky Bay, 1922-1924—Oats Sown without Manure.

Plot.	Fertiliser used per Acre on Preceding Wheat Crop.			Yield per Acre.								
	1922.			1923.			1924.			Means, 1923-4.		
	T.	C.	L.	T.	C.	L.	T.	C.	L.	T.	C.	L.
1. 1cwt. superphosphate	1	3	22	1	2	82	0	13	5	0	17	99
2. $\frac{1}{2}$ cwt. superphosphate	1	0	31	0	15	16	0	12	27	0	13	77
3. $\frac{1}{2}$ cwt. sulphate of potash . .	—			0	15	104	0	13	73	0	14	88
4. 1cwt. super. and $\frac{1}{2}$ cwt. sulphate of potash	1	4	25	0	16	65	0	16	30	0	16	47
5. No manure	1	0	71	0	16	101	0	14	63	0	15	82
6. 2cwts. superphosphate	1	5	51	0	16	69	0	14	4	0	15	36
7. 2cwts. super. and 1cwt. sulphate of potash	—			0	15	46	0	16	9	0	15	83
Rainfall	11.70in.			15.15in.			11.80in.			13.47in.		

EXPERIMENTS AT YURGO.

[Conducted by Mr H. Sanders.]

The Nunkeri and Yurgo Branch of the Agricultural Bureau approached the Department of Agriculture in 1920 with a request that experimental plots be conducted in that district, on the farm of Mr. H. Sanders, of Yurgo. After an inspection of the district and a conference with members of the Agricultural Bureau Branch, it was finally decided to conduct—(a) rotation-of-crops experiment, having as its main object the carrying of sheep, (b) wheat manurial plots, (c) small fodder plots for demonstration purposes.

The soils of the Yurgo district consist mainly of two types, the ridges being composed of sandy soils of light texture and light colour, with the hollows containing good red-coloured loam, and the rotation-of-crops experimental block was selected to contain about one-fifth of the sandy high land and about four-fifths of red loam. Samples taken from these two types of soil were analysed by the Department of Chemistry, with the following results:—

Soil Samples from Yurgo.

	Red Soil of Hollows.		Sandy Soil of Hills.	
	0-6in. %	6-12in. %	0-6in. %	6-12in. %
Phosphoric acid (P_2O_5)	0.030	0.014	0.032	0.004
Potash (K_2O)	0.118	0.666	0.002	0.013
Nitrogen (N)	0.034	0.040	0.017	0.020
Organic carbon	0.84	0.56	0.48	0.40
Lime (CaO)	0.196	0.020	0.154	0.050
Chlorides	0.005	0.047	0.001	0.006
Manganese (Mn_2O_3)	0.004	0.013	0.004	0.002
Total silica	84.1	57.0	97.0	96.0
Soil reaction	Alkaline	Alkaline	Very faintly alkaline	Neutral

YURGO ROTATION-OF-CROP EXPERIMENT.

As the farmers, of which the Nunkeri and Yurgo Branch of the Agricultural Bureau is composed, desired a rotation of crops which would reduce the amount of cropping and increase the livestock carrying capacity of the land, a five-course rotation on six-acre plots was arranged as follows:—

Year.	Block A.	Block B.	Block C.	Block D.	Block E.
1922	Wheat (plots)	Fallow	Wheat	Lucerne	Lucerne
1923	Lucerne	Wheat (plots)	Fallow	Lucerne	Lucerne
1924	Lucerne	Lucerne	Wheat (plots)	Fallow	Lucerne
1925	Lucerne	Lucerne	Lucerne	Wheat (plots)	Fallow
1926	Fallow	Lucerne	Lucerne	Lucerne	Wheat (plots)
1927	Wheat (plots)	Fallow	Lucerne	Lucerne	Lucerne

Wheat—60lbs. seed per acre; manurial plots.

Lucerne—6lbs. seed per acre; no manure.

YURGO MANURIAL PLOTS WITH WHEAT.

As manurial experiments were also wanted by local farmers, it was decided that the plot carrying wheat would, each season, be divided up into six smaller plots, and receive different manurial dressings. The plots arranged, and the yields secured from each for these are set out below:—

Manurial Plots with Wheat—Yurgo, 1922-1924.

Plot.	Manuring per Acre.	Yield per Acre.		Means,	
		1922.	1923.	1924.	1922-1924.
		B. L.	B. L.	B. L.	B. L.
1. No manure		9 9	7 10	15 40	10 40
2. 1cwt. superphosphate		26 24	24 11	32 2	27 32
3. ½cwt. super. and 5cwts. lime		20 10	26 45	28 51	25 15
4. 1cwt. super. and 5cwts. lime		25 19	27 44	26 57	26 40
5. 2cwts. super. and 5cwts. lime		24 7	36 58	33 4	31 23
6. 3cwts. super. and 5cwts. lime		24 20	36 30	35 23	32 4

Rainfall 15.27in. 17.47in. 16.49in. 16.41in.

To date these experiments clearly show a very considerably increased yield from the wheat crops receiving applications of superphosphate, and that dressings of lime are not warranted, as is perhaps better seen in the next table where the financial aspect of the manuring is shown, taking 5s. per cwt. as cost of superphosphate, £2 per ton as cost of lime, and 3s.9d. as value of the wheat:—

Increased Value of Wheat from Use of Fertilisers—Yurgo, 1922-1924.

Manuring per Acre.	Yields		Increased yields over no manure.	Net value of Increase.
	1922	24.		
	B. L.	B. L.	B. L.	£ s. d.
No manure	10	40	—	—
1cwt. superphosphate	27	32	16 52	2 18 3
½cwt. super. and 5cwts. lime	25	15	14 35	2 2 2
1cwt. super. and 5cwts. lime	26	40	16 0	2 5 0
2cwts. super. and 5cwts. lime	31	23	20 43	2 17 8
3cwts. super. and 5cwts. lime	32	4	21 24	2 15 3

GRAZING OF ROTATION PLOTS—YURGO, 1922-1924.

As is shown in a table above, lucerne is grown after each wheat crop, and is to be grazed by farm livestock for three seasons, after

which the land is to be fallowed for the next crop of wheat. What is shown as "First Year Grazing" in the table below, covers a period of about 18 months, being taken from harvest time until June 30th. of the second year, because (a) there is practically no grazing during the first nine months of the crop, due to the necessity of "nursing" it, and (b) the "Third Year Grazing" must be completed by July 1st to allow of the land being fallowed:—

Grazing Returns from Lucerne Following Wheat—Yurgo, 1922-1924.

Year of Wheat. Crop.	Sheep per Acre per Year.			Means, 3-year period.
	First Year. *	Second-Year. †	Third Year. †	
1921 crop (Block E)	1.37	2.00	—	—
1922 crop (Block A)	1.82	—	—	—

Mean grazing over whole period—1.73 sheep per acre per year.

*About 18 months from harvest until June 30th.

†From July 1st to June 30th.

WHEAT VARIETY TESTS AT YURGO.

As well as the other experimental trials, Mr. Sanders is also conducting tests with wheat varieties, each variety being sown on fallowed land, at the rate of 60lbs. of seed with 1cwt. superphosphate per acre, the plots being three acres in area for every kind. These experimental plots were commenced in 1923, and the results secured from them in the past two seasons are set out below:—

Yields of Wheat Varieties—Yurgo, 1923-1924.

Variety.	1923.		1924.		Means. 1923-1924.	
	B.	L.	B.	L.	B.	L.
Ford	29	38	34	16	31	57
Currawa	28	8	34	38	31	23
Walker's Wonder	27	11	35	33	31	22
Canaan	26	35	33	51	30	13
Sultan	24	47	33	59	29	23
Felix	21	51	34	0	27	55
Late Gluyas	15	37	—	—	—	—
Caliph	—	—	41	1	—	—
Marshall's No. 3	—	—	37	41	—	—
Rainfall	17.47in.		16.49in.		16.98in.	

FODDER CROPS AT YURGO.

A block of a few acres of the really poor sandy land of the district has been divided into plots of about 1 acre in area, and they are being used to test various fodder plants. The plots were originally sown with:—

Lucerne (three plots with different rates of seeding).

Subterranean clover.

King Island melilot.

Buffalo grass

Rhodes grass

Wimmera rye grass

Wallaby grass.

Owing to various causes, these plots carried only a comparatively thin stand of the various fodders by the end of 1923, so the land was ploughed up and the plots reseeded in the autumn of 1924, and by the end of the year the crops had behaved as is set out below:—

Perennial Rye Grass.—This grass germinated well, and has covered the whole plot, after having provided good grazing throughout the year.

Wimmera Rye Grass.—Has made very nice even growth, but is not so good as the Perennial Rye Grass.

Buffalo Grass.—Was transplanted in the early spring, but very few plants have survived.

Yorkshire Fog Grass.—The seed germinated really well, and a good stand has resulted, and much grazing was provided during the year.

Subterranean Clover.—Germinated well, but strong winds soon after germination blew most of the small plants out of the ground, and those remaining only made fair growth.

Evening Primrose.—Suffered in the same way as did the Subterranean clover.

Lucerne (6lbs. seed per acre).—This is a nice stand of lucerne, and made fairly strong growth during the year.

Lucerne (4lbs. seed per acre).—The stand is much thinner than that on the plot receiving 6lbs. seed per acre, but the plants did equally well.

Lucerne (2lbs. seed per acre).—A scanty crop of lucerne by no means thick enough to provide much grazing.

King Island Melilot.—The germination of this was rather patchy, but parts of the crop made very fair growth.

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OFFICIAL HERD LIST.

The Department of Agriculture supplies the following particulars of performances of pure bred dairy cattle which have completed periods of lactation, under official test, between July 1st, 1924, and January 31st, 1925 :—

Herd Book No.	Cow's Name	Total Milk.	Total Butterfat.	Age at Date of Calving.		Standard.
		Lbs.	Lbs.	Yrs.	Days.	
MR. L. T. COWAN'S JERSEY BREED.						
4760	Melford's Majesty	9,378	483-11	8	148	350
6624	Lady Grey of Dalebank	7,593	396-41	6	72	350
8259	Viola of Dalebank	6,723	381-18	3	349	275
10581	Milkmaid of Dalebank	7,473	356-85	3	13	250
8339	Carnation of Dalebank	7,020	351-07	4	98	300*
4256	Clematis	6,294	329-84	9	330	350
10576	Columbine of Dalebank	5,822	329-19	3	124	250
11818	Anemone of Dalebank	4,449	242-25	1	332	200
10578	Lotus of Dalebank	4,479	237-96	2	106	200
11314	Iris of Dalebank	4,483½	206-71	2	1	200
11821	Lady McEwin of Dalebank	3,502½	193-02	1	356	200
MR. W. P. ECKERMANN'S JERSEY BREED.						
4436	Sweet Lotus	8,023½	414-03	9	8	350
8374	Carmen of Pella	6,357	357-71	3	355	275
8371	Jean Kelly of Sunny Vale	5,332½	331-74	4	267	325
10595	Princess Audrey of Pella	6,094½	318-34	2	333	225
MR. F. E. HANNAFORD'S FRIESIAN BREED.						
531	Holland Queen's Diamond	16,576½	559-10	7	160	350
1060	Rosey 60th of Lilydale	11,407½	395-33	2	322	225
172	Monovale Tertia Paxton	8,481	309-81	5	75	350
1381	Rosevale Martha Posch	6,480	268-18	3	134	250
HENLEY STUD FRIESIAN LTD'S. FRIESIAN BREED.						
1250	Domino's Friesland Belle	17,227½	601-73	11	141	350
393	Woodcrest Maid	13,962	494-63	6	110	350
1226	Buttercup 3rd of Ashlynn	12,243	455-86	8	236	350
202	Monovale Rita Paxton	12,220½	416-84	7	110	350
454	Woodcrest Domino Queen	13,182	413-30	6	209	350
MR. H. LAUGHTON'S JERSEY BREED.						
3687	Lady Hernia 3rd	6,583½	324-58	14	314	350
11557	Rosebud 5th of Penrhyn	5,545½	318-07	5	190	350
11549	Christobel 8th of Penrhyn	4,296	236-05	2	89	200
MESSRS. MUIRHEAD & BUTLER'S MILKING SHORTHORN BREED.						
11653	Gayboy's Sunflower of Wangara	6,363	244-53	4	86	300
10417	Princess 3rd of Wangara	5,190	219-20	5	119	350
11993	Lovey 2nd of Arrawatta	5,106	208-53	5	200	350
12888	Triumph's Tot of Wangara	4,905	177-56	3	235	275
11646	Gayboy's Dora of Wangara	4,332	162-46	3	59	250
MR. B. G. NEUMANN'S JERSEY BREED.						
8413	Jenny of Grantala	5-458½	317-16	5	100	350
11656	Carnation of Oakhill	4,983	298-47	2	210	225
5401	Pimpernel of Springhurst	6,129	293-29	7	134	350
8410	Lily of Grantala	4,468½	277-49	3	91	250

OFFICIAL HERD LIST—*continued.*

Herd Book No.	Cow's Name.	Total Milk.	Total Butterfat.	Age at Date of Calving.		Standard.
		Lbs.	Lbs.	Yrs	Days.	
MR. J. A. J. PFITZNER'S JERSEY BREED.						
8922	Jane of Koorali	6,489	348-34	3	263	275
12843	Mariposa of Hampden	4,636½	267-90	2	13	200
8416	Olive of Grantala	5,364	267-55	3	270	275
12442	King's Violet of Hampden	4,426½	234-51	1	347	200
MR. W. A. RODDA'S JERSEY BREED.						
40389	Dunalister Mannakin's Northwood Morocco	4,312½	238-65	2	213	225
MR. E. O. TRAEGER'S JERSEY.						
12079	Beauty of Sunny Vale	3,444	207-59	1	305	200
MR. H. R. WASH'S JERSEY.						
13245	Damsel of Brinkley	6,549	299-08	3	21	256

* Tested for 243 days only.

NOTE.—A number of I.M.S. cows have also completed tests, but their figures are being withheld from publication until it is known that such cows have been accepted as eligible for registration in the Herd books.

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THE PERCHERON HORSE.

[A paper read by FRAS. EVELYN PLACE, B.Sc., &c., Lecturer on Animal Hygiene, Roseworthy Agricultural College, at the A.A.A.S. Congress, Adelaide, 1924.]

Introduction.

On previous occasions the writer has had the honor of addressing meetings of the Australasian Association for the Advancement of Science on matters appertaining to livestock, and the appreciation with which his views have been met encourages him to hope that the remarks he is about to make anent the Percheron horse will not be devoid of interest to members of the Agricultural Section of the Association.

Personal Responsibility for Views Expressed.

But at the outset he is going to substitute the personal for the impersonal form of address. Various factors have weighed with me in forming this decision, but I have decided to do so mainly because I assume a purely personal responsibility for the views set forth. It is now nearly 10 years since I first endeavored to interest Australian agriculturists in the Percheron, and, like most protagonists, I have met with opposition as well as support. On one occasion a hefty breeder of Shires somewhat insolently invited me to settle the merits of the breeds by an exhibition of fisticuffs in the Adelaide Show ring. Another time a distinguished stranger to whom I was introduced said, "Oh, you are the Percheron man; have you ever seen one?" in a tone of voice that implied that only crass ignorance could excuse my presence outside the walls of a mental home. I was rude enough to answer merely, "Yes; many, in France."

Adverse Criticism Negligible.

I have never been called upon to answer any more cogent criticisms of the breed than these, and I am not impressed with their weight. One is not surprised to meet with Clydesdales from Australia and New Zealand, or Shires foaled many thousand miles from Rugby or Peterborough, so it should not be a matter of wonder to see Percherons outside that small tract of country whose salient points are Dieppe and Amiens on the north, Paris and Orleans on the west, Tours on the south, and Le Mans and Le Havre on the east.

American Draught Stallions 66.5 per cent. Percherons.

But it may be a matter of surprise to find that 66.5 per cent. of the pure-bred draught stallions in the United States of America are Percherons.

Similarities of Environment between La Perche and Australia.

The tract I have outlined has much in common with Australia, especially South Australia, geologically, in climate and in products, and it was this that first led me to consider the Percheron as well suited to local conditions, for I have always considered that environ-

ment has much to do with successful stock-breeding, so much so that breeds which still retain their original names, such as the Jersey, have responded to environment sufficiently to appear under quite a new guise.

Environment Favorable to Percherons.

One effect of environment on the Clydesdale in Australia has rather worried breeders from time to time, namely, the tendency to run to leg. The same tendency in the Percheron would not be disastrous, but is not desirable.

Difficulties of Import in Early Days.

It may fairly be asked why there are not more Percherons in Australia, if they can maintain the claim to be so suitable. I think the answer is more psychological than zoological.

British Disdain of "Foreign" Stock.

Men of British stock are peculiarly shy and disdainful of anything "foreign," a frame of mind that has run somewhat to excess in Australia in the use of the word "pommie." Another reason is that the importation of stallions is both costly and hazardous. In the past it was even more so; the horse had to stand on his own merits entirely without a chance of perpetuating his breed in its purity owing to lack of Percheron mares. He had to live down the disdain of the foreigner, and at the end of his career had been the sire of grade stock only. Speed and improvement of transport over sea have done much to remove these difficulties, though the basic ideas still survive.

Early Importations.

As a matter of fact, some 40 or more years ago Percheron stallions were imported into Victoria and New South Wales, and they have left their mark favorably on their stock in the Stawell, Ararat, and Jerilderie districts. Commercially the ventures were not altogether successful, and the profit and loss account is, after all, the basis of such enterprises.

Present-day Enterprise of Breeders.

During the last decade Mr. R. B. Falkiner, Haddon Rig, New South Wales, was so pleased with Percherons he had ordered that on their arrival he cabled to Mrs. Emmett to select him three mares, three, four, and five years old, stipulating that they must be in foal to Rhum, purchased and recently landed in South Australia by Mr. A. J. Melrose, who, in conjunction with Mr. J. Melrose, has imported stallions and fillies of the purest French blood, and in my estimation has by so doing greatly benefited this State.

Local Demand for Percherons

It is to be hoped that, financially, they have done well by the enterprise, and I have reason to know that in the last case the progeny of the travelling stallions has always topped the price at local auctions and been most eagerly sought after by the farmers in the neighborhood, for reasons that will be apparent when I come to discuss some of the points which render the horse so suitable for South Australia.

The Percheron a Primitive Type.

It is often assumed that the Percheron horse is a kind of Corriedale, varying in type and of no fixed ancestry. This assumption is entirely erroneous. He is a primitive type, with a lineage the age of which throws other more fashionable breeds entirely in the shade.

Old History.

Many families of Percherons date back to the early Crusades. I do not stress this point heavily myself, for both the Shire and the Clydesdale might also claim to be the lineal descendants of the Great War Horse.

Truth about Arab Blood.

I mention it because it is the probable starting point of a legend connecting the Percheron with the Arab, a legend that I am loath to upset, but truth demands. This legend, having lived a hazy existence for centuries, suddenly crystallises in 1820 in the shape of two reputed Arabs, Godolphin and Gallipoli, who are supposed to have stamped the Arab type on their Percheron posterity.

Accurate State Documents.

Fortunately for the Percheron, accurate State documents have been kept since the beginning of the eighteenth century, and among these we find that Godolphin is described as a bay English saddle-horse by a thoroughbred out of a hunter mare of no pedigree, and after a few years at stud he is cast as unsatisfactory for the getting of army remounts.

Gallipoli a Grey Turk Small Saddle-horse.

Gallipoli has no Arab pedigree, and the Arabs have kept most careful pedigrees for many centuries. He is described as a dapple grey Turkish saddle-horse, and after a few years' trial he, too, is cast as getting stock too small for army remounts. I have seen his type in India and Australia changing hands as pure Arabs, and in India I have seen a drooping of the eyelid of the Arab dealer which strongly suggested a wink when the deal was closed. Needless to say, even pure Arabs would not get 2,000lbs. draught horses, such as America insisted on buying from La Perche to found and maintain the Percheron type in America.

Percheron Draughts Heavy, but Active.

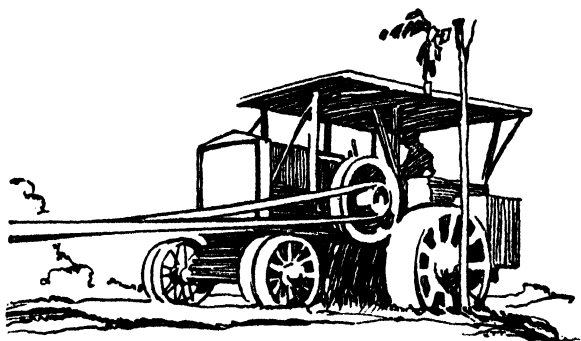
So the story will not stand. Moreover, there are genuine documents extant showing that the Percheron was a weighty draught dating from the middle of the fifteenth century, and present-day records both in France and America show that the Percheron ranges round 1,500lbs.

Comparison with Australian Draughts

Some years ago it was necessary for statistical purposes to record the weights of Clydesdale and grade draughts at Roseworthy Agricultural College, and the mean worked out at 1,400lbs., so the comparison is not unfavorable to the Percheron.

Neolithic Horse-heads Resemble Percheron, and are Dolichocephalic—Arab is Brachycephalic.

Beyond this, antiquarian research shows that in the Neolithic age horses' heads closely resembling those of the Percheron of to-day have



How do you harness a horse? —————

So as to make it easier for him to pull, don't you?

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Goodyear "Klingtite" Belts hold the pulleys in the slipless grip of their friction surface. They deliver full power all the time, and run with a loose,

free-swinging action that favors the engine bearings.


They require no belt dressing, need no breaking in.

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And Goodyear "Klingtite" Belts are unequalled for wear.

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been found, in each case the type of skull is distinctly dolichocephalic, while that of the Arab is brachycephalic. It may thus be assumed that on both scientific and historical grounds the Percheron is a primitive type that has been bred pure, weighty, and big, and, as Mr. A. J. Melrose wrote me lately, "Buyers are always astonished when the horse is taped."

Percheron Ideal Type of Draught Horse.

In other words, the Percheron approaches the ideal type of draught: a big horse that looks snug. His height is very deceptive, too. He looks about 15.2h.h., and measures nearer 17h.h.

English Opinion.

This conformation alone would stamp his suitability for Australian conditions, but he has others equally desirable. I will quote from an English observer, who, incidentally, is interested in Shires, and therefore may be taken as an impartial witness:—"The necks of Percherons are cresty and run wide in both geldings and mares, which make some of them seem shorter in the forehead than is actually the case. Their shoulders are of good depth and free from lumber, and of very fair lay for a draught. Backs are short and wide, and loins strong, quarters powerful and deep, tails nicely up, and what a godsend are their deep round ribs. Their legs are short, with a plentiful supply of bone, lightly clothed with hair, enough to protect, yet not enough to be a nuisance. In actual height they are not very vast; in bulk, which is of infinitely more importance, they are big, strong, and low, with weight enough to pull and shaft a load. Their bottom lines cover a fair space of ground.

Temperament.

Amiable, quiet, kindly things to handle they veritably are, but stolid and slow they most assuredly are not. As workers I do not desire to meet anything better in the horse line. They are both quick and active. They can start a good load "on the nail," and can as readily stop it.

Strength and Activity.

A Percheron can walk in front of its load at four miles an hour, and trot back with the empty wagon at seven or eight. I have yet to meet the horse of pronounced Percheron type who will "throw up the sponge."

South Australian Opinion and Experience—Marked Amiability.

I will call one more witness, Mr. A. J. Melrose, of South Australia, with over ten years' personal knowledge of Percherons in this State, who writes:—"The Percherons and 99 per cent. of the half-breds are invariably extremely docile and intelligent; usually refuse to be 'broken' in the ordinary sense; never kick, jib, or become excited; are good grubbers; develop into big measurements, and probably on that account possess that peculiar ease of manner in handling a heavy load.

Size and Bulk.

"They do not look big, but, as a man said to me only yesterday, it is when you come to put the harness on them that you find out what they measure. I have never had a colt indulge in a choking tug-of-war when first roped, and many won't even tighten the rope beyond what a man could hold. I have known many of them put straight into the team without any handling, and they always seem to go off like an old horse." (He is writing largely of half-breds.) "I find the mares 16-16½ hands in height, and four that I have in work average over 7ft. round the girth in just good working order."

As Tractor Reduces Number of Horses on the Farm Percheron Type is Required for Remainder.

When I had the honor to place before the Association at Auckland some economic factors in relation to the horse and tractor on the farm, I freely granted that the tractor will come, but I firmly assert that the disappearance of the horse from the farm is not a necessary corollary; naturally he will decrease in number, but for the work that the tractor cannot do he must increase in suitability, and I know of no breed that will answer all the requirements better than the Percheron under ordinary Australian conditions, and now in the transition period is the opportunity to grasp the occasion and make good.

Discussion of Color.

I am not going to shirk the question of color. Again I will quote Mr. Melrose:—"The farmers have always objected to the grey color, but I believe, in spite of that, that if we can supply enough stallions the Percheron will make a big bid towards displacing his rivals. The predominance of grey is very largely due to the French farmer's preference for it, but let me quote a few figures which will show that a dapple-grey is not a white horse.

Statistics re Color.

The Percheron Society of America analysed 2,000 consecutive registrations, with the following results:—Black, no white marks, 8.70 per cent.; black, some white marks, 44.20 per cent.; grey, no white marks, 7.40 per cent.; grey, some white marks, 30.55 per cent. I do not think either Clydes or Shires are entirely free from "Some white marks," and in the above table the blacks top the greys, many of which would closely approximate the blacks in shade. Other colors provide the small remaining balance.

Color Bar Removed from Gunners.

And it is estimated that at the present time 60 per cent. of the best gunners in the British army are the cross of the Percheron stallion imported from France and bred in the United States on native mares. One knows how very few years ago greys were tabooed for army purposes. Merit has conquered.

Percheron is More Suitable as Station Sire of Immediate Future.

The Percheron is worth more than a passing glance to the Australian breeder who sells mobs of horses at 1s. 11d. a head, or shoots 800 because he cannot sell them. The Percheron will help to solve his difficulties.

ANALYSES OF SAMPLES

The following are the results of analyses made by the Government Agricultural by Assistant Inspectors Beaumont, Harris, Leishman, and Orchard, during the year

Reference.	Name of Firm and Fertiliser.	Phosphate.							
		Water Soluble.		Citrate Soluble.		Acid Soluble.		Total.	
		Vendor's Guarantee.	Result of Analysis.	Vendor's Guarantee.	Result of Analysis.	Vendor's Guarantee.	Result of Analysis.	Vendor's Guarantee.	Result of Analysis.
		%	%	%	%	%	%	%	%
ADELAIDE CHEMICAL AND FERTILISER CO., LTD.									
1361	Agricultural lime	—	—	—	—	—	—	—	—
1291	Bone dust	—	—	—	—	40.0	46.8	40.0	46.8
1350	"	—	—	—	—	40.0	44.1	40.0	44.1
1351	"	—	—	—	—	40.0	41.1	40.0	41.1
1363	"	—	—	—	—	40.0	42.8	40.0	42.8
1369	"	—	—	—	—	40.0	42.6	40.0	42.6
1295	Bone super.	15.0	21.8	15.0	11.9	4.0	10.5	34.0	44.2
1366	"	15.0	18.3	15.0	17.1	4.0	8.7	34.0	44.1
1401	"	15.0	22.4	15.0	13.6	4.0	9.6	34.0	45.6
1456	Chemical phosphate powder	—	—	—	—	39.0	41.7	39.0	41.7
1359	Grass manure	12.0	16.6	14.0	15.1	10.0	13.1	36.0	44.8
1364	"	12.0	14.0	14.0	17.1	10.0	10.8	36.0	41.9
1289	Guano super.	27.0	29.5	3.0	3.1	3.0	3.6	33.0	36.2
1292	"	27.0	31.6	3.0	1.4	3.0	2.4	33.0	35.4
1356	"	27.0	31.9	3.0	2.1	3.0	2.2	33.0	36.2
1360	"	27.0	31.6	3.0	2.7	3.0	2.1	33.0	36.4
1370	"	27.0	28.6	3.0	3.6	3.0	3.6	33.0	35.8
1455	"	27.0	27.1	3.0	3.7	3.0	4.5	33.0	35.3
1465	"	27.0	33.4	3.0	1.5	3.0	3.3	33.0	38.2
1288	Mineral super.	36.0	37.9	—	—	—	—	36.0	37.9
1296	"	36.0	39.0	—	—	—	—	36.0	39.0
1400	"	36.0	41.2	—	—	—	—	36.0	41.2
1365	Potato manure	20.0	19.7	8.0	13.0	4.0	4.4	32.0	37.1
1294	Super. B	16.0	18.2	14.0	15.1	4.0	6.2	34.0	39.5
1358	"	16.0	17.0	14.0	16.4	4.0	7.8	34.0	41.2
1290	Top Special super.	45.0	45.8	—	—	—	—	45.0	45.8
1293	"	45.0	46.3	—	—	—	—	45.0	46.3
1355	"	45.0	49.1	—	—	—	—	45.0	49.1
1357	"	45.0	47.8	—	—	—	—	45.0	47.8
1362	"	45.0	47.4	—	—	—	—	45.0	47.4
1407	"	45.0	47.4	—	—	—	—	45.0	47.4
1460	"	45.0	48.0	—	—	—	—	45.0	48.0
ANDERS & SONS, E.—									
1462	"Victor" bonedust	—	—	—	—	40.0	46.7	40.0	46.7
CARBONATE OF LIME FERTILISER CO., LTD.—									
1472	Carbollim	—	—	—	—	—	—	—	—
CRESCO FERTILISERS, LIMITED—									
1470	B.B. guano	—	—	8.75	9.9	26.25	30.0	35.0	39.0
1471	Blood and bone	—	—	22.0	19.1	8.5	9.9	30.5	29.0
1367	Guano super.	27.0	31.4	3.0	4.6	3.0	2.2	33.0	38.2
1406	Guano and super.	23.0	19.4	7.5	9.6	14.0	22.7	44.5	51.7
1503	"	23.0	23.3	7.5	8.2	14.0	22.2	44.5	53.7
1299	Real bird guano	—	—	14.75	9.1	29.5	39.6	44.25	48.7
1353	"	—	—	14.75	13.7	29.5	36.5	44.25	50.2
1297	36 super.	36.0	37.0	—	—	—	—	36.0	37.0
1463	"	36.0	37.9	—	—	—	—	36.0	37.9
1294	46 super.	46.0	49.5	—	—	—	—	46.0	49.5
1403	"	46.0	50.4	—	—	—	—	46.0	50.4
1464	"	46.0	48.0	—	—	—	—	46.0	48.0
1469	"	46.0	46.5	—	—	—	—	46.0	46.5

ANALYSES OF SAMPLES

Reference.	Name of Firm and Fertiliser.	Phosphate.							
		Water Soluble.		Citrate Soluble.		Acid Soluble.		Total.	
		Vendor's Guarantee.	Result of Analysis.	Vendor's Guarantee.	Result of Analysis.	Vendor's Guarantee.	Result of Analysis.	Vendor's Guarantee.	Result of Analysis.
		%	%	%	%	%	%	%	%
	CRESCO FERTILISERS, LIMITED—continued—								
1368	50 phosphate	22.0	29.0	4.0	2.6	28.0	28.2	54.6	59.8
1404	"	22.0	24.7	4.0	4.9	28.0	41.8	54.0	70.9
1461	"	22.0	22.8	4.0	6.0	28.0	28.4	54.0	56.7
1504	"	22.0	20.1	4.0	4.7	28.0	31.7	54.0	56.5
	CROMPTON & SON, LTD.—								
1500	Blood and bone manure	—	—	—	—	25.0	27.8	25.0	27.8
1502	Gardeners' Friend	—	—	—	—	28.5	26.2	26.5	26.2
1501	Pure bonedust	—	—	—	—	42.0	45.0	42.0	45.0
	GOVERNMENT PRODUCE DEPARTMENT—								
1285	PED bonedust	—	—	—	—	45.0	53.8	45.0	53.8
1286	PED bone manure	—	—	—	—	25.0	38.0	25.0	38.0
	GUSTER GUANO CO., LTD.—								
1408	Guano	—	—	—	—	49.0	39.7	49.0	39.7
	HASELL, ARTHUR H.—								
1513	Blood manure	—	—	—	—	—	—	—	—
1511	Gypsum fertiliser	—	—	—	—	—	—	—	—
1510	Marion guano	—	—	—	—	27.0	55.9	27.0	55.9
1512	Hassell's Rising Sun sulphate of potash	—	—	—	—	—	—	—	—
	JACOBS, WALTER—								
1352	Bone manure	—	—	—	—	33.0	36.8	33.0	36.8
1517	"	—	—	—	—	33.0	35.1	33.0	35.1
	METROPOLITAN ABATTOIRS BOARD—								
1509	M.A.B. blood manure	—	—	—	—	—	—	—	—
1354	" No. 1 bone manure	—	—	—	—	32.0	31.6	32.0	31.6
1508	"	—	—	—	—	32.0	36.5	32.0	36.5
1514	"	—	—	—	—	32.0	37.1	32.0	37.1
	SOUTH AUSTRALIAN GAS COMPANY—								
1515	" Sagasco " sulphate of ammonia	—	—	—	—	—	—	—	—
1516	(Neutral)	—	—	—	—	—	—	—	—
	WALLAROO-MT. LYLE FERTILISERS, LTD.—								
1459	Adelaide super. (Y.P.)	30.0	33.0	—	—	—	—	30.0	33.0
1457	Guano super.	27.0	30.8	3.0	2.9	3.0	3.5	33.0	37.2
1468	"	27.0	34.4	3.0	2.0	3.0	2.5	33.0	38.9
1505	"	27.0	34.1	3.0	3.6	3.0	3.6	33.0	41.8
1453	High grade super.	45.0	44.7	—	—	—	—	45.0	44.7
1467	"	45.0	45.4	—	—	—	—	45.0	45.4
1507	"	45.0	52.0	—	—	—	—	45.0	52.0
1402	Standard super	36.0	39.5	—	—	—	—	36.0	39.5
1454	"	36.0	36.7	—	—	—	—	36.0	36.7
1458	"	36.0	37.2	—	—	—	—	36.0	37.2
1466	"	36.0	38.6	—	—	—	—	36.0	38.6
1506	"	36.0	41.7	—	—	—	—	36.0	41.7

1923-1924 REPORT ON HERD TESTING ASSOCIATIONS IN SOUTH AUSTRALIA.

[By ARTHUR J. PERKINS, Director of Agriculture.]

INTRODUCTORY.

Hitherto, individual yearly reports have been issued for each association formed in the State. This practice has unavoidably involved a good deal of repetition, and in future it is proposed to publish a single yearly report covering the operations of all the associations at the time in being. This arrangement will facilitate comparisons of district with district, and by healthy rivalry, will, it is hoped, assist towards heavier local production. Unfortunately, owing to local conditions, all associations do not open their year from the same month, and this will necessarily lead to a certain amount of delay in publishing the yearly report.

OBJECTS OF HERD TESTING ASSOCIATIONS.

A Herd Testing Association is an association of dairymen, living within reasonable distance of one another, the individual members of which agree to submit all cows in their herds to regular tests of both milk and butterfat. The objects aimed at by these associations may be summarised as follows :—

- (a) The gradual elimination from dairymen's herds of cows shown to be more or less unprofitable.
- (b) The adoption of improved feeding and handling practices.
- (c) The exclusive use of pure-bred bulls of heavy milking ancestry.
- (d) The rearing of heifer calves from the most profitable cows of the herds only.
- (e) The general increase of local dairy production.

WORKING OF THE ASSOCIATION.

The association appoints an executive body from its members and a paid recorder, whose duty it is to test the cows of members of the association at least once in each calendar month. Morning and evening milk is weighed and tested for butterfat. The figures are forwarded periodically to the Department of Agriculture, where all final results are calculated and recorded. In all departmental calculations the total amounts of milk and butterfat produced in one month are divided by the total number of cows present in the herd at the time, whether dry or in milk. It follows, therefore, that the dairyman will avoid retaining unprofitable animals, which usually consume feed at the expense of more profitable ones.

STATE ASSISTANCE.

The State, in the interests of greater national production, has offered special inducements towards the formation and working of these associations. For a period of three successive years the

State pays 50 per cent. of the working expenses of each association. At the end of each quarter the accounts of the association are audited by an officer of the Department of Agriculture and subsequently a subsidy is forwarded to the recorder equal to 50 per cent. of the working expenses incurred during that quarter. In addition, substantial cash prizes are awarded each year to the most meritorious herds of the association. Hitherto most of the associations have agreed to placing these cash prizes to the credit of the working expenses of the association concerned.

NUMBER OF ASSOCIATIONS IN THE STATE.

The following associations have been formed and are at present at work in South Australia :—

	When Founded.
1. River Murray Association	October 1st, 1920
2. Mt. Gambier and District Association	August 1st, 1922
3. Glencoe Association	October 1st, 1923
4. Milang Association	May 1st, 1924
5. Narrung Association	October 1st, 1924

The last two associations—Milang and Narrung—not having yet completed their first year of operations, are not therefore included in this report.

SUMMARISED 1923-24 STATISTICS FOR THE THREE ASSOCIATIONS UNDER REVIEW.

In Table I. have been summarised the main statistical data of interest affecting the three associations.

TABLE I.—*Showing Main 1923-24 Statistical Data for the Three Associations.*

	River Murray Association.	Mount Gambier Association.	Glencoe Association.	Combined Associations.
Number of herds	22 (a)	23 (b)	19 (c)	64
Mean cows in herds	317.9	328.3	315.1	961.3
Mean cows in milk	264.2	270.5	252	786.7
Mean per cent. in milk . . %	83.1	82.4	80	81.8
Mean days in milk	303	301	292	299
Mean milk per cow . . Galls.	675.36	673.52	568.27	639.61
Mean butter fat per cow Lbs.	303.29	270.94	237.56	270.69
Mean butterfat test . . . %	4.49	4.02	4.18	4.23
Estimated mean butter per week per cow, . . . Lbs.	6½	6	5½	6

(a) Of these, six herds did not complete twelve months tests.

(b) Of these, eight herds did not complete twelve months tests.

(c) Of these, three herds did not complete twelve months tests.

The general results as set out above in Table I. are on the whole satisfactory. We have here 961 cows producing in the course of 12 months, milk at the rate of 639.61galls. and butterfat at the rate of 270.69lbs., or approximately 311lbs. of commercial butter. How good these figures are may be gauged by a comparison of the mean quinquennial return of milk production in the Commonwealth.

TABLE II.—*Showing Mean Yearly Production of Milk in the Commonwealth (1918-1922).*

	Gallons.
Victoria	343
South Australia	315
New South Wales	311
Tasmania	286
Queensland	242
Western Australia	220
Commonwealth	305

It will be noted that in the matter of mean milk production per cow, there is not much to choose between the River Murray Herd Testing Association—675.36galls.—and the Mount Gambier Herd Testing Association—673.52galls.; the Glencoe Herd Testing Association, on the other hand, which is in its first year of operations, with a mean return of 568.27galls., lags about 16 per cent. behind the leading association. There is, however, no reason why with perseverance and additional experience, the Glencoe herds should not equal the output of the other two districts.

In butterfat, on the other hand, the River Murray Association has the advantage of 32.35lbs. over the Mount Gambier herds, or close on 12 per cent., and 65.73lbs. over the Glencoe herds, or close on 28 per cent.

MONTHLY MILK AND BUTTERFAT PRODUCTION.

In Table III. has been summarised, month by month, the mean milk and butterfat production of the three associations.

TABLE III.—*Showing Month by Month Mean Milk and Butterfat Production per Cow in each Association.*

	River Murray.		Mount Gambier.		Glencoe.	
	Milk. Galls.	Butterfat. Lbs.	Milk. Galls.	Butterfat. Lbs.	Milk. Galls.	Butterfat. Lbs.
1923.						
August	(59.34)	(24.82)	49.07	18.68	—	—
September	(66.38)	(27.77)	62.09	22.92	—	—
October	64.65	28.68	79.42	29.06	60.59	22.07
November	61.14	26.59	79.29	29.74	71.83	27.58
December	59.62	25.37	74.93	29.97	70.62	29.14
1924.						
January	58.79	25.74	56.71	23.56	56.35	24.39
February	51.51	22.81	44.75	19.34	45.42	20.07
March	51.91	23.94	46.44	20.87	48.24	21.43
April	49.39	23.24	39.42	17.29	36.05	16.52
May	54.94	25.23	40.59	17.89	32.55	14.80
June	46.91	21.91	39.14	17.55	28.48	12.94
July	53.71	24.58	41.04	17.98	29.13	12.07
August	60.48	27.98	(57.58)	(24.59)	36.61	15.05
September	60.78	26.99	(67.03)	(28.49)	53.20	21.04
Twelve months' production	675.36	303.29	673.52	270.94	568.27	237.56

NOTE.—Figures shown in brackets in columns 2, 3, 4, and 5 do not concern twelve months' mean production in this table.

We have here contrasted two different types of milk production—that of the River Murray herds tolerably even from one end of the year to the other; and that of the Mount Gambier and Glencoe herds with spurts of heavy production in spring and early summer, appreciable decline over the latter portion of summer and autumn, and low production during the winter months.

The position will probably be made clearer by a reference to production expressed in gallons of milk per day for each month rather than in mean total monthly production. This has been summarised in Table IV.

TABLE IV.—*Showing Month by Month Mean Daily Milk Production per Cow in the Three Associations.*

	River Murray Association.	Mount Gambier Association.	Glencoe Association.
	Galls.	Galls.	Galls.
1923.			
August	(1.91)	1.59	—
September	(2.21)	2.07	—
October	2.09	2.56	1.95
November	2.04	2.61	2.39
December	1.93	2.42	2.28
1924.			
January	1.90	1.83	1.82
February	1.78	1.54	1.57
March	1.67	1.50	1.56
April	1.65	1.31	1.22
May	1.78	1.31	1.05
June	1.56	1.30	0.95
July	1.73	1.32	0.94
August	1.95	(1.86)	1.18
September	2.03	(2.23)	1.77
Twelve months' mean	1.85	1.84	1.56

With a view to bringing out the position more clearly, Table IV. has been given graphic illustration. An examination of the figure will show how the River Murray graph continues on fairly level lines throughout the year, whereas the graphs of both Mount Gambier and Glencoe keep at high level between September and January inclusively, fall away between February and April inclusively, and keep at an unduly low level between May and August.

It follows, therefore, that dairy production in the Mount Gambier and Glencoe districts is good during five months and poor during the remaining seven months of the year. It need scarcely be said that in districts so admirably situated for dairying this should not be so; and it is hoped that herd testing may do something towards improving matters. This low production over seven months of the year is clearly attributable to two things—(1) inadequate provision for hand feeding when natural pasture is spent, and (2) inadequate provision for shelter to milch cows during the cold, bleak months of the year.

It might be argued, of course, that since for the mean daily production over the year there is only a difference of one one-hundredth of a gallon between the River Murray and Mount

Gambier herds, there is little to grumble at; and that what one makes by steady regular production, the other secures by unusual spring exertions. To this can be replied that in 1923-24, as will be shown later on, the River Murray herds fell below their earlier means; and further, that because Mount Gambier can do so much better than the River Murray over five months of the year, is no reason why it should not approach the latter's returns over the remaining seven months. In my view, better feeding in the off season and reasonable shelter will bring about the desired results.

Another feature tending towards low winter production is the fact that far more cows appear to be dried off in the South-East during the winter months than is the case on the River Murray. In the absence of provision for adequate feeding and shelter, this practice is understandable. I have indicated below in Table V. the percentage of cows in milk during each month of the year for the three associations.

TABLE V.—*Showing Percentage of Cows in Milk for Each Month of the Year, together with Mean Daily Milk Production in Relation to Cows actually in Milk only.*

	River Murray Association.		Mount Gambier Association.		Glencoe Association.	
	Percentage of Cows in Milk.	Daily Milk Production per Cows in Milk.	Percentage of Cows in Milk.	Daily Milk Production per Cows in Milk.	Percentage of Cows in Milk.	Daily Milk Production per Cows in Milk.
	%	Galls.	%	Galls.	%	Galls.
1923—						
August	—	—	73.9	2.14	—	—
September	—	—	82.3	2.51	—	—
October	84.2	2.48	91.4	2.80	84.2	2.32
November	88.2	2.31	94.7	2.79	92.2	2.59
December	88.3	2.18	93.8	2.58	92.6	2.46
1924—						
January	87.2	2.17	91.9	1.99	94.7	1.92
February	86.7	2.05	88.9	1.74	95.8	1.64
March	83.7	2.00	86.4	1.73	92.9	1.67
April	84.6	1.95	76.9	1.71	84.9	1.44
May	84.7	2.09	69.5	1.88	76.6	1.37
June	77.7	2.01	65.2	2.00	67.5	1.41
July	75.4	2.30	59.1	2.24	58.2	1.61
August	76.5	2.58	—	—	55.5	2.13
September	75.9	2.67	—	—	64.9	2.73
12 months' mean	83.1	2.22	82.4	2.23	80.0	1.94

From Table V. we may note for the River Murray herds tolerably even distribution of cows in milk over the 12 months, with June to September as main drying-off months. Similarly, the mean daily milk production of cows actually in milk is very regular with maximum production from August to October inclusively.

At Mount Gambier, on the other hand, the bulk of the herd is in milk between October and January inclusively, whilst in the winter months about one-half of the cows may be dry. At Glencoe

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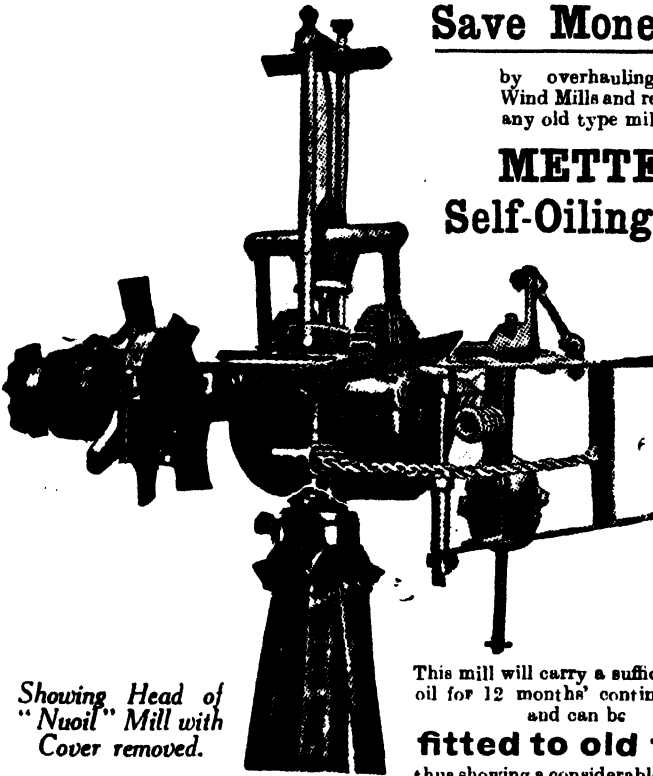
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the bulk of the herd is in milk between November and March inclusively, whilst 50 per cent. of the cows may be dry in winter. Similarly for these two associations, mean daily milk production relatively to cows actually in milk, is fairly irregular throughout the year, reaching a high maximum from September to December inclusively and falling away thereafter to moderate yields.

COMPARISON WITH PREVIOUS YEARS' RESULTS.

This comparison can affect only the River Murray and Mount Gambier Associations, since 1923-24 represents the first year of operations for the Glencoe Association.

(a) RIVER MURRAY HERD TESTING ASSOCIATION.

The results secured by this association in four successive years have been summarised below in Table VI.

TABLE VI.—*Summarising Results of Four Years' Herd Testing (1920-1924).*

	1920-21.	1921-22.	1922-23.	1923-24.
Number of herds	18	15	19	22
Mean cows in herds	305.5	290.5	271.6	317.9
Mean cows in milk	256.2	235.6	230.0	264.2
Mean milking percentage	83.9%	81.1%	84.7%	83.1%
Mean period in milk	306 days	296 days	309 days	303 days
Mean total milk yield	685.3galls.	700galls.	704.9galls.	675.4galls.
Mean daily milk yield	1.88	1.92	1.93	1.85
Mean butterfat test	4.36%	4.38%	4.37%	4.49%
Mean total butterfat yield	298.6lbs.	306.3lbs.	308.2lbs.	303.3lbs.

It is clear that from the point of view of actual results there has not been much progress among the River Murray herds in 1923-24. The mean milk yield—675.4galls.—is lower than that secured in 1920-21, and the mean butterfat yield—303.3lbs.—only slightly above it, but below those in 1921-22 and 1922-23. The chief cause of these relatively unsatisfactory results would appear to be the loss to the association of some of its older members and the acquisition in their stead of new members, whose herds have not proved quite as efficient.

(b) MOUNT GAMBIER HERD TESTING ASSOCIATION.

Results secured by this association in 1922-23 and 1923-24 are contrasted in Table VII.

TABLE VII.—*Contrasting 1922-23 and 1923-24 Results.*

	1922-23.	1923-24.
Number of herds	18	23
Mean cows in herds	345.0	328.3
Mean cows in milk	264.5	270.5
Mean milking percentage per cent.	76.7	82.4
Mean period in milk days	280	301
Mean total milk yield galls.	551	673.5
Mean daily milk yield galls.	1.51	1.84
Mean butterfat test per cent.	4.21	4.02
Mean total butterfat yield lbs.	231.9	270.9

There is no doubt that the second year of operations has shown a general all-round improvement in the production of the Mount Gambier herds. Mean total milk production has risen from 551galls. per cow to 673.5galls., an improvement of over 22 per cent., and mean total butterfat production from 231.9lbs. per cow to 270.9lbs., an improvement of over 17 per cent. The discarding of unprofitable cows and improved feeding have, no doubt, accounted mainly for these highly satisfactory results. The lengthening of the mean milking period from 280 days to 301 days will also have contributed its share.

It is hoped that in future years even better results will be secured.

CHANGES IN THE 1923-24 HERDS.

	River Murray.	Mount Gambier.	Glencoe.
	Head.	Head.	Head.
Opening numbers	354	375	303
Purchases	77	62	37
Heifers on first calf	45	26	49
Late registered herds	—	—	12
Totals	476	463	401
Deaths	7	11	5
Sales	81	67	67
Resignation of owner	96	129	12
Totals	187	207	84
Total numbers	476	463	401
Less reductions	187	207	84
Closing numbers	289	256	317

It will be noted that out of 1,340 head of cattle handled by the three associations, deaths were represented by 23, or 1.7 per cent. only.

INDIVIDUAL RESULTS.

Full details concerning the returns from individual herds have already been published in the *Journal of Agriculture*. In the present report, therefore, the returns from the more meritorious herds only, and other matters of general interest will be dealt with.

(a) RIVER MURRAY HERD TESTING ASSOCIATION.

In this association 16 herds completed 12 months' test. Of these, 11 herds averaged 300lbs. of butterfat or over, and two herds 350lbs. or over. Similarly, 13 herds averaged 600galls. of milk or over, 10 herds 650galls. or over, five herds 700galls. or over, two herds 800galls. or over, and one herd 900galls. or over.

These results are satisfactory, and show that good steady milking is not confined to the leading herds.

The prize-winning herds in the association were :—First prize £75: Mr. R. W. Ellis, of Pompoota, with a mean butterfat production per cow of 374.23lbs. from 880.12galls. of milk; second prize £37 10s.: Mr. C. J. Morris, of Monteith, with a mean butterfat production per cow of 365.64lbs. from 942.28galls. of milk;

third prize £10: Mr. J. Tapps, of Pompoota, with 325.58lbs. of butterfat from 700.04galls. of milk.

The winners are to be congratulated on the results.

MR. R. W. ELLIS' HERD.

Mr. Ellis is a new-comer to the association, in the fourth year of its existence; it is, therefore, much to his credit that his herd should have topped the list in the first year of its admission. This herd consists of 13 grade Shorthorns in good milking condition.

Mr. Ellis' herd yielded 30 per cent. more milk than the mean yield of the association and 69 per cent. more than the yield of the least productive herd in the association. Expressed in terms of milk at 10d. a gallon, these increases would represent respectively £8 10s. 8d. and £15 0s. 1d. per cow.

The performances of winners in preceding seasons are contrasted below.

	Mean Production per Cow	
	Butterfat. Lbs.	Milk. Galls.
1920-21. Mr. J. H. Halliday	364.29	939.21
1921-22. Mr. J. A. Halliday.....	369.23	960.64
1922-23. Mr. C. J. Morris	363.87	914.91
1923-24. Mr. W. R. Ellis	374.23	886.12

MR. C. J. MORRIS' HERD.

Mr. Morris' herd, which led the way in 1922-23, took second place in 1923-24. It had been connected with the association since its earliest days; hence, its past performances may be contrasted with those secured in 1923-24.

	Number of Cows.	Mean Period in Milk.	Mean Milk per Cow.	Mean Butterfat per Cow.
		Days.	Galls.	
1920-21	45.07	296	715.53	294.79
1921-22	27.99	307	898.30	362.17
1922-23	30.85	306	914.91	363.87
1923-24	34.59	316	942.28	365.64

It will be noted that during its connection with the association, the history of this herd has been one of continuous progress. Originally, more or less nondescript in character, the herd has gradually been graded up to high quality Friesians. It consists at present of 37 head of pure and grade Friesians. Heifers have been retained exclusively from heavy milking dams.

MR. J. W. TAPPS' HERD.

Like Mr. Ellis, Mr. Tapps was a new-comer to the association in 1923-24, and he is therefore to be congratulated on securing third place. The herd consists of Jersey-Shorthorn crosses headed by a Friesian sire.

Other herds with meritorious performances in 1923-24 are those of—

Mr. S. Starr, with 323.8lbs. of butterfat from 705.08galls. of milk.

Mr. S. Cheetham, with 322.35lbs. of butterfat from 613.43galls. of milk.

Mr. H. H. Clark, with 311.46lbs. of butterfat from 690.14galls. of milk.

Mr. A. E. Denman, with 311.09lbs. of butterfat from 663.71galls. of milk.

Mr. H. R. Gill, with 307.11lbs. of butterfat from 696.35galls. of milk.

Mr. H. Mountstephen, with 305.24lbs. of butterfat from 692.65galls. of milk.

Mr. J. Gormlie, with 304.94lbs. of butterfat, from 663.08 galls. of milk.

Mr. J. Dillon, with 302.04lbs. of butterfat from 700.51galls. of milk.

Relatively to the herds in general, Mr. H. J. Apps reported as follows:—"The general condition of the herds was fairly satisfactory, but the stock on practically all the farms of members residing at Mypolonga were not carrying the condition that they were at the time of my annual inspection last year. This, I was given to understand, was partly due to shortage of feed during the winter months."

MOUNT GAMBIER AND DISTRICT ASSOCIATION.

In this association 15 herds completed 12 months' test; of these five herds produced 300lbs. or over of butterfat per cow and one over 400lbs. of butterfat. The latter is a record for herd testing societies in South Australia. Similarly, 10 herds produced 600galls. or over of milk; six herds 700galls. or over, four herds 800galls. or over, and one herd 1,000galls. or over. The latter, again, is a record for herd testing associations in South Australia.

These results are highly satisfactory and show marked improvement on the results of the preceding year.

The prize-winning herds in this association were:—

First prize, £100: Mr. E. Tollner, with 431.97lbs. butterfat per cow from 1,071.69galls. of milk.

Second prize £25: Messrs. H. Heaver & Son, with 334.86lbs. butterfat from 803.26galls. of milk.

Third prize £10: Mr. H. Tarrant, with 333.15lbs. of butterfat per cow from 887.52galls. of milk.

MR. E. TOLLNER'S HERD.

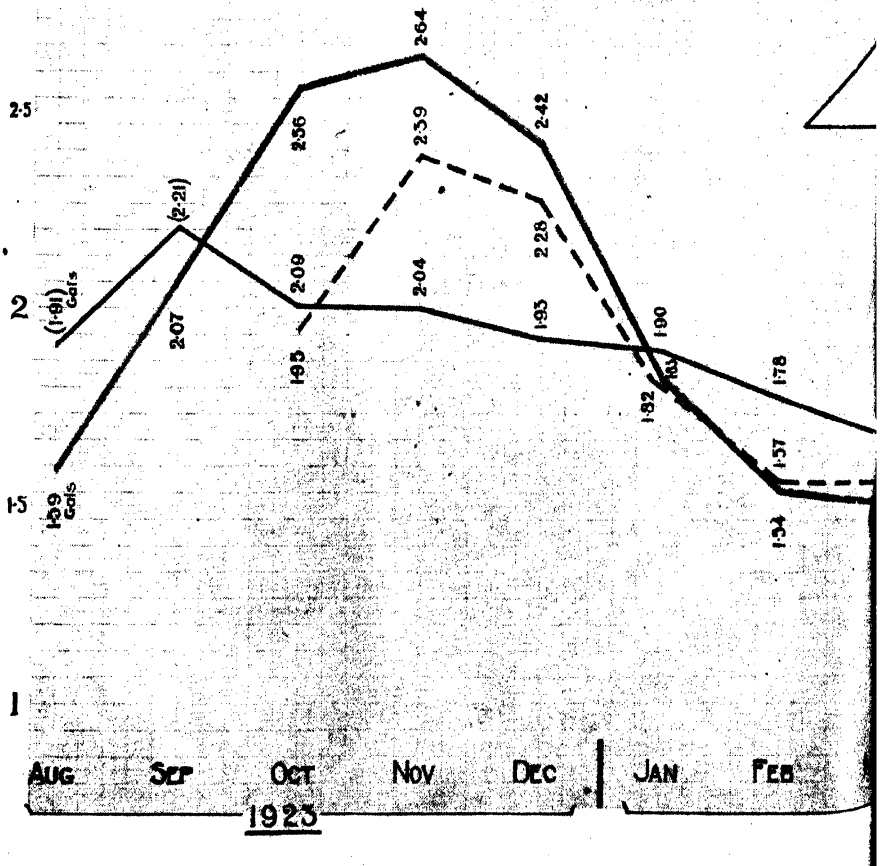
Mr. Tollner's herd secured the first prize both in 1922-23 and 1923-24. Statistical data concerning these two years are tabulated below:—

	1922-23.	1923-24.
Mean cows in herd	15.8	15.8
Mean cows in milk	13.6	14.6
Percentage of cows in milk	85.7	92.8
Mean period in milk	Days 313	339
Mean milk per cow per annum	Galls. 879.3	1,071.7
Mean milk per day	Galls. 2.40	2.94
Mean butterfat test	Per cent. 4.39	4.03
Mean butterfat per cow per annum	Lbs. 385.8	432.0
Mean butterfat per cow per week	Lbs. 8½	9½

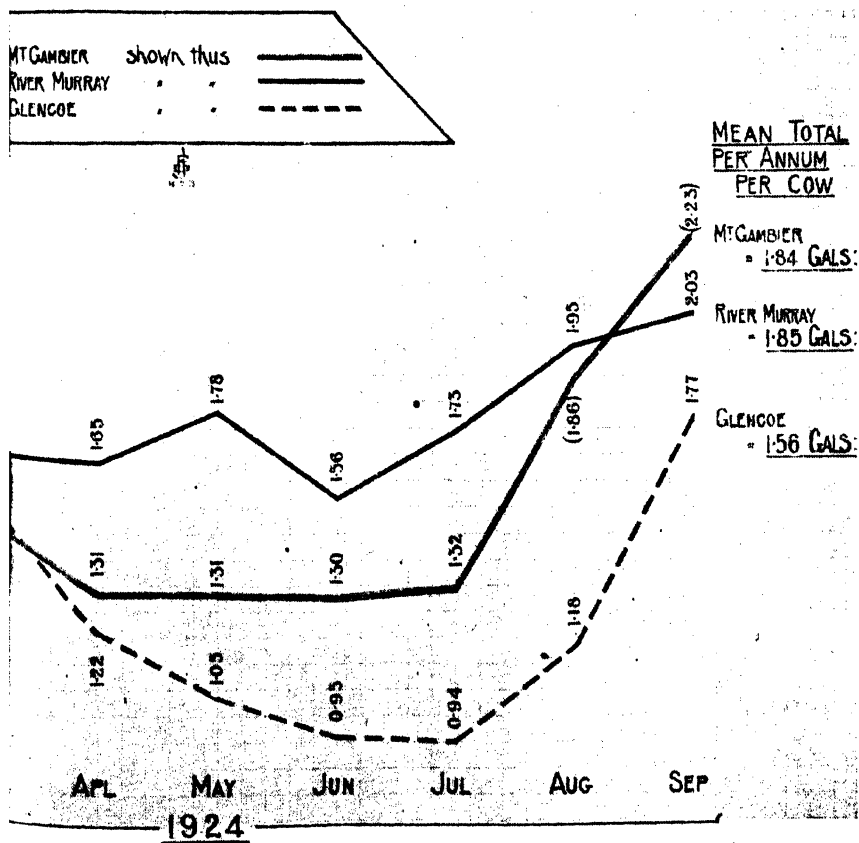
It will be seen, therefore, that Mr. Tollner has raised his mean milk production per cow from 879.3galls. to 1,071.69galls., an improvement of close on 22 per cent.—a very meritorious performance in view of the high standard already attained in 1922-23. This represents a mean daily yield of practically 3galls. of milk throughout the year. Similarly, the butterfat production has been raised from 385.8lbs. per cow to 432.0lbs., an improvement of close on 12 per cent.

Now, whilst these results are highly creditable to Mr. Tollner's herd, and have won for him not only the first prize in the Mount Gambier Association, but in addition the champion prize—£100—over all other associations in the State for 1923-24, it is necessary to point to one factor which has assisted very materially towards these results. It will be observed from the above data that

3



92.8 per cent. of Mr. Tollner's cows were in milk throughout the year, giving a mean period in milk for each cow of 339 days, against 313 days for his own herd in 1922-23, and 301 days for the whole association in 1923-24. Now there is no doubt that this long mean milking period has contributed very materially towards these final results. But how has it been secured? Very largely, it would appear, by sales of dry cows and immediate purchase of cows in full milk. The mean number of cows in Mr. Tollner's herd in 1923-24 was 15.8; during that period sales and purchases were represented by seven respectively, or about 44 per cent. of his herd. That this practice did not obtain to the same extent in other herds is evidenced by the following facts. If we overlook Mr. Tollner's herd, sales were represented by 19.2 per cent. and purchases by 17.6 per cent. for the balance of the herds. Mr.



Tollner's right to this practice is not disputed; indeed, it may be the legitimate consequence of herd testing should the latter bring under his notice cows unworthy to retain a place in his herd. At the same time it cannot be imagined that a successful dairyman could continue indefinitely, exchanging one-half of his herd year after year without in the end affecting his financial position.

Mr. Tollner's herd has done remarkably well; I have, however, felt it necessary to draw attention to one of the factors that has contributed materially to this high rate of production.

Another factor contributing in the same direction is the fact that out of 23 cows passing through the herd, only one was a heifer on her first calf; all the others were aged cows.

MESSRS. J. L. HEAVER & SON'S HERD.

Messrs. Heaver & Son's herd secured second prize both in 1922-23 and 1923-24. The results of these two seasons are contrasted below:—

	1922-23.	1923-24.
Mean cows in herd	12.4	12.1
Mean cows in milk	10.5	10.6
Percentage of cows in milk	84.6	88.2
Mean period in milk	Days 309	323
Mean milk per cow per annum	Galls. 738.9	803.3
Mean milk per day	Galls. 2.02	2.19
Mean butterfat test	Per cent. 4.32	4.18
Mean butterfat per cow per annum	Lbs. 318.6	334.9
Mean butterfat per cow per week	Lbs. 7	7½

Messrs. Heaver & Son have improved their milk production by about 9 per cent., and their butterfat by about 5 per cent. Both of these results are satisfactory in view of earlier high standard.

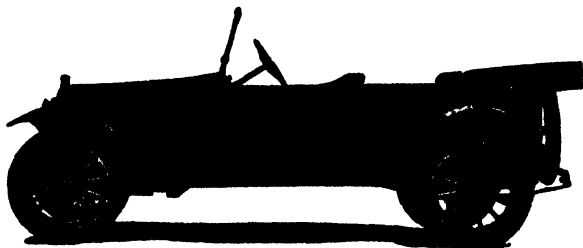
It should be observed that in this herd of 12 cows, there were in 1923-24 one sale and one purchase and two heifers on their first calf.

MR. H. TARRANT'S HERD.

Mr. H. Tarrant, whose herd secured third prize, was a new-comer to the association in 1923-24, and is to be congratulated on his early success. The records of his herd were as follows:—

Mean cows in herd	15.2
Mean cows in milk	13.3
Percentage of cows in milk	86.7
Mean period in milk	Days 317
Mean milk per cow per annum	Galls. 887.5
Mean milk per day	Galls. 2.43
Mean butterfat test	Per cent. 3.79
Mean butterfat per cow per annum	Lbs. 333.2
Mean butterfat per cow per week	Lbs. 7½

Other herds with satisfactory performances are those of—
Mr. F. Crouch—a new-comer to the association—with 319.76lbs. of butterfat from 776.5galls. of milk.



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Mr. E. Kentish—also a new-comer in 1923-24—with 314.94lbs. of butterfat from 813.2galls. of milk.

GLENCOE HERD TESTING ASSOCIATION.

In this association 16 herds completed 12 months' test; of these, seven herds exceeded a mean production of 600galls. per cow, three of 700 galls., and one of 800galls. Similarly, three herds exceeded a mean butterfat production of 300lbs. per cow.

These results are satisfactory for a first year of operations; and it is confidently anticipated that they will be improved upon in succeeding years.

The prize-winning herds in the association were as follows :—

First prize £50: Mr. J. Frazer, with 346.5lbs. of butterfat from 821.7galls. of milk.

Second prize £25: Mr. A. Riddle, with 340.9lbs. of butterfat from 779.7galls. of milk.

Third prize £10: Mr. J. Cram, with 317.4lbs. of butterfat from 785.9galls. of milk.

MR. J. FRAZER'S HERD.

This herd consists mainly of Ayrshire and Ayrshire grades, two of which were heifers on their first calf. Statistical data concerning the performances of these herds are summarised below :—

Mean number of cows in herd	17.3
Mean number of cows in milk	14.5
Percentage of cows in milk	83.6
Mean period in milk	Days 305
Mean milk per cow per annum	Galls. 821.7
Mean milk per cow per day	Galls. 2.25
Mean butterfat test	Per cent. 4.22
Mean butterfat per cow per annum	Lbs. 346.5
Mean butterfat per week	Lbs. 7½

These results, although not quite equal to those of Mr. Tollner (Mount Gambier) in 1922-23, are nevertheless better than those of the Mount Gambier second herd in the same year; and Mr. Frazer is certainly to be congratulated on securing them.

MR. A. J. RIDDLE'S HERD.

This herd consists of Jerseys and grade Jerseys, three of which were on their first calves. Statistical data concerning the herd's performances are shown below :—

Mean number of cows in herd	17.2
Mean number of cows in milk	15.6
Percentage of cows in milk	91.0
Mean period in milk	Days 332
Mean milk per cow per annum	Galls. 779.7
Mean milk per cow per day	Galls. 2.14
Mean butterfat test	Per cent. 4.37
Mean butterfat per cow per annum	Lbs. 340.9
Mean butterfat per week	Lbs. 7½

These results are reasonably satisfactory. It is to be observed, however, that the mean period in milk—332 days—appears unusually high; it may be accounted for, however, by the fact that Mr. Riddle sold two cows, when their lactation period had been completed. Mr. Riddle was well within his rights in doing this, as presumably they were cows that had not given full satisfaction.

MR. J. CRAM'S HERD.

This herd consists of Jerseys, Ayrshires, and grades of the same. Statistical data are summarised below:—

Mean number of cows in herd	11·7
Mean number of cows in milk	9·0
Percentage of cows in milk	84·6
Mean period in milk	Days 309
Mean milk per cow per annum	Galls. 785·9
Mean milk per cow per day	Galls. 2·15
Mean butterfat test	Per cent. 4·04
Mean butterfat per cow per annum	Lbs. 317·4
Mean butterfat per week	Lbs. 7

These results are very fair, and will no doubt be improved upon in the second year.

SELECTION BY OWNERS OF BEST AND WORST COWS IN THEIR HERDS BEFORE STARTING HERD TESTING.

When a Herd Testing Association is formed, owners are requested to indicate which, in their opinion, are the two best cows and the two worst cows in their herds. This is done with a view to bringing home to them some of the advantages of herd testing.

Best Cow in the Herd.—Out of 13 owners who supplied particulars, five only were able to indicate their best cows. In one case the cow indicated as best came seventh, in another fifth, in another fourth, and in four cases third.

Second Best Cow.—Again, out of 13 owners, three only were able to point to their second best cow. In four cases the second best cow came first, in two cases third, and in two cases fourth, and in one case sixth.

Worst Cow.—Again, out of 13 owners, in one case only was the worst cow picked out correctly; and in one case the cow indicated as worst came sixth out of ten.

Second Worst Cow.—In no single instance was the second worst cow indicated correctly.

Whilst it may readily be admitted that defective production in a single season need not necessarily condemn a cow absolutely, nevertheless, the above results are sufficiently striking to indicate how little a dairyman who does not practise herd testing is able to distinguish between productive and unproductive animals.

ORCHARD NOTES FOR SOUTHERN DISTRICTS FOR MARCH, 1925

[By C. H. BEAUMONT, Orchard Instructor and Inspector.]

The main work for the month will be packing apples and pears for export. The crop generally is short. Great care must be taken to pack only the most suitable fruit. There is a temptation when there is a small crop to pack "the best we have" as the top grade, forgetting that other States have a good crop and will pack standard grades only. There is a great need of care in marking the sizes on the boxes; it is useless to mark a $3\frac{1}{4}$ as $2\frac{1}{2}$. Inspection will reveal the discrepancy, and the cost of remedying the error will be yours. If you pack pitted or scabby fruit you should not complain when the Inspector orders that the word "blemished" should be placed upon the case.

Spraying for codlin moth appears to have been more successful than usual this year. Most of the growers used a stronger mixture than is recommended; a few more are using a spreader and can clearly see the benefit of it.

Pear and cherry slugs have spread almost through the State, very few growers having taken the necessary steps to check them.

It is good to use Bordeaux mixture on trees, cherry and Japanese plums in particular, where fungous pests have been very bad.

Pruning apricot and peach trees may be commenced in later parts; the bearing-rod of vines may be removed with advantage to the vine.

Currant drying may be completed. The weather has again spoiled the sample and made drying difficult, but there is no doubt that some started cutting long before the grapes were ripe; it is easy to have samples tested before picking. The cool damp weather will make more think of dehydrators. A pamphlet and plan can be had upon application and cost of postage.

Take out all sickly trees and leave holes open until planting time. Send in your order for trees if you intend to extend the orchard.

Citrus trees not bearing may be ringbarked by using a sharp knife and making one clean cut around the bark, or by using a twitch of No. 8 wire tightly for about a fortnight when the trees are in full blossom. Thin out branches and keep limbs well off the ground.

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ADVISORY BOARD OF AGRICULTURE.

Minutes of meeting held Wednesday, February 11th, there being present:—Mr. W. S. Kelly (in the chair), Capt. S. A. White, C.M.B.O.U., Messrs. F. Coleman, A. M. Dawkins, G. Jeffrey, J. W. Sandford, A. B. Feuerherdt, P. H. Jones, H. Wicks, C. J. Tuckwell, W. J. Colebatch, B.Sc. (Agric.), M.R.C.V.S., H. S. Taylor, and H. J. Finnis (Secretary).

Apologies were received from Professor Perkins, Hon. W. G. Duncan, M.L.C., Messrs. C. A. Loxton, B.V.Sc., A. Julius, and Col. Rowell.

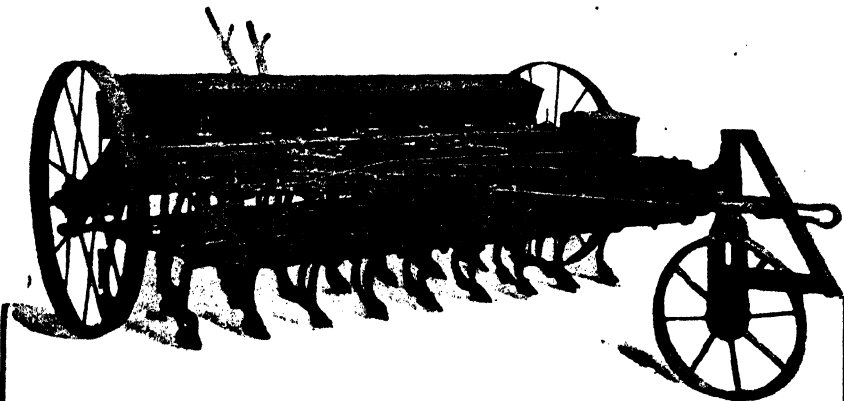
Minutes of previous meeting were read and confirmed.

Visitors.—Among visitors present by invitation of the Chairman were:—Mr. A. Krichauff (eldest son of the first Chairman of the Central Agricultural Bureau, which eventually became merged in the Advisory Board of Agriculture), Mr. George Quinn (Horticultural Instructor), and Mr. R. Fowler (Manager of the Blackwood Orchard).

Seed Wheat Distribution.—An intimation was received from the Director of Agriculture that it was proposed to adopt as far as possible during the next season, the New South Wales system for the distribution of seed wheat.

Weather Forecasts for Murray Areas.—In reply to the resolution of the 1924 Annual Congress, suggesting the distribution of weather forecasts in the fruit-drying districts, and establishment of climatological stations there, the Prime Minister intimated that tentative weather forecast could be supplied by the Commonwealth Meteorologist soon after 10 a.m. daily, as was already being sent to companies in Mildura and Irymple districts during the fruit-drying season. The companies referred to bore the cost of telephonic transmission of the forecast. It was further intimated that applications for the establishment of more climatological stations would be considered on their merits. The Board decided that Branches of the Agricultural Bureau interested should be advised of the conditions under which they could secure weather forecasts. It was further decided to suggest to the Commonwealth Government that official cognisance should be taken of the meteorological data at present being collected at the Government Experiment Orchard, Berri, and that the usual facilities provided by the Commonwealth Government in connection with climatological stations should be made available for that place under the usual conditions.

Agricultural Libraries.—The suggestion of the 1924 Congress of the Agricultural Bureau that steps should be taken to establish a Circulating Library for Branches of the Agricultural Bureau was considered by the Board which recommended that instead of adopting the idea of a circulating library, the Government should undertake to encourage Branches to establish libraries by offering a subsidy £ for £ up to an amount of £5 in any one year to any one Branch for purchase of books on agricultural subjects made by that Branch. The matter was referred to the Minister, who has approved of the idea and limited the amount of subsidy to £50.



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Blackwood Orchard Records.—Further consideration was given to the question of the compilation and publication of records of work carried out at the State Experiment Orchard, Blackwood. A report on the matter was received from Mr. Quinn (Horticultural Instructor), and after discussion it was decided that this report should be passed on to the Committee of Investigation of Departmental Activities for consideration.

Experimental Farm on Reclaimed Swamp Area.—A recommendation from the Mypolonga Branch of the Agricultural Bureau that the Board should again bring before the notice of the Government the need for establishing an experimental farm on a reclaimed swamp area, was referred to the Committee of Investigation of Departmental Activities for consideration.

Experimental Orchard and Vineyard.—The Light's Pass Branch of the Agricultural Bureau submitted a recommendation that the Government should establish an experimental orchard and vineyard in that district. It was decided to seek a report on the suggestion from the Horticultural Instructor (Mr. Geo. Quinn).

Free Rail Transit.—A suggestion was received from the Coomandook Branch of the Agricultural Bureau that farmers travelling to Government farms or Agricultural Bureau Conferences for educational purposes should travel free on the railways. The Board decided that it could not support the idea.

Italian Bees on Kangaroo Island.—Attention was drawn to the fact that in 1885 a law prohibiting the importation into Kangaroo Island of any bees other than the Italian was enacted. The Secretary stated that his attention had been directed to this Act by the Williamstown Branch of the Agricultural Bureau, and from inquiries he had made from Branches on Kangaroo Island, it would appear that the bees on the island were of pure Italian strain.

Carriage of Dried Fruit.—Reference was made to the question of endeavoring to secure a reduction in the rail freight of dried fruit. It was decided to bring this matter under the notice of the newly appointed Dried Fruits Board.

Conferences.—The Secretary drew attention to a series of five Conferences which were to be held during the months of February, March, and April.

Life Membership.—The following members of the Koppio Branch, each of whom had been associated with the Agricultural Bureau for a period of 20 years and upwards, were added to the list of life members:—Messrs. G. B. Gardner, T. Brennand, W. R. Richardson, and J. Newell.

Leave of Absence.—Mr. Geo. Jeffrey, who was about to visit England, was granted leave of absence for six months.

Veterinary Surgeon for Country Districts.—Mr. P. H. Jones brought before the Board the question of Government assistance to establish veterinary surgeons in country districts. At the recent Conference at Minnipa, he stated, the Minister of Agriculture had expressed his sympathy with the principle as it applied to the West Coast. Mr. Jones mentioned that a veterinary lodge had been

established in the Pinnaroo district, and suggested that the provision of a Government subsidy would very materially assist in putting it on a sound basis. A resolution was carried appointing a committee, consisting of Mr. W. S. Kelly, the Chief Inspector of Stock (Mr. C. A. Loxton), Mr. W. J. Colebatch, and Mr. P. H. Jones, to inquire into the position of the veterinary lodge at Pinnaroo, and make suggestions as to how the Board could assist in establishing it on a sound footing. It was further determined that the Secretary should endeavor to secure from the Hon. Minister of Agriculture a reply to the request that the Minister should make known at an early date the conditions under which the Government would consider granting monetary aid to farmers on Eyre Peninsula, to enable them to secure qualified veterinary assistance.

Tubercular Dairy Cattle.—Mr. A. M. Dawkins mentioned that there was reason to believe that a number of dairy cattle in the country were affected with tuberculosis, and the milk from these animals was being consumed by human beings. He expressed the view that possibly the steps taken to control the health of animals and distribution of their milk were not all that could be desired. He moved that the Chief Inspector of Stock might be asked to report to the Board setting out powers which existed in this State which enabled an examination of the cattle for tuberculosis to be made, and also what methods of inspection and control of dairy farms and milch cows existed in the other States, especially Victoria.

Sale of Low Grade Raisins.—Mr. H. S. Taylor mentioned the difficulty that was being experienced in finding a market for low grade raisins, and suggested the possibility of their use as stock food. After instancing results that had been secured in other parts of the world, Mr. Taylor moved that the Director of Agriculture (Professor Perkins) and the Principal of the Roseworthy Agricultural College (Mr. W. J. Colebatch) might undertake to lay out and conduct experiments designed to determine the value of low grade raisins as a food stuff for livestock, particularly pigs. The motion met with the approval of the Board, and it was determined, on the motion of Mr. C. J. Tuckwell, to seek information with respect to Californian experiments in relation to this matter.

New Members.—The following names were added to the list of members of existing Branches:—Bay of Shoals—A. J. Turner; Rapid Bay—H. White; Murraytown—E. Woolford; Tweedvale—L. J. T. Watkins, C. D. Boerth, G. T. Boerth, H. J. Mines, G. T. Gothard, G. R. Klau, B. Swaine, S. J. Hooper, A. R. Preuss, A. W. Reuter; Nantawarra—G. A. Durdin; Light's Pass—J. Vaughan; Currency Creek—G. Bennett, P. B. Shipway, R. H. Collett; Wilkawatt Women's—Mrs. E. A. Altus, Mrs. A. G. Ellis, Mrs. W. R. Neville; Kalangadoo—G. L. Dean; Bay of Shoals—B. H. Bell, H. T. Bell, T. M. Beaty; Bomera—G. Nash, J. Webb; Glencoe—C. G. Woodward, W. J. Goode, A. Jones, M. Little, G. Duke; Lone Gum and Monash—E. Evans, H. E. Evans, G. Holmes; Strathalbyn—H. W. Jackson; Winkie—V. Possingham; Gawler River—C. Toll, F. Toll.

AGRICULTURAL CONFERENCE AT KINGSCOTE.

Representatives of Branches of the Agricultural Bureau situated on Kangaroo Island met in Conference at Kingscote on Saturday, February 21st. Mr. E. C. Seager (Chairman of the MacGillivray Branch) presided over a representative gathering, which included agriculturists from all parts of the island, the Chief Inspector of Stock (Mr. C. A. Loxton, B.V.Sc.), the Chief Agricultural Instructor (Mr. W. J. Spafford), the Wool Instructor of the School of Mines (Mr. A. H. Codrington), and the Secretary Advisory Board of Agriculture (Mr. H. J. Finnis). After visiting delegates and officers of the Department had been welcomed by Mr. Seager, Mr. H. J. Finnis delivered the opening address, in which he referred to many matters associated with the scope and usefulness of the Agricultural Bureau system, and advantages associated with the country conferences. Delegates then discussed a number of questions which had been previously submitted and to which answers had been supplied by the visiting officers. This was followed by an address by the Wool Instructor (Mr. A. H. Codrington), and a veterinary demonstration by the Chief Inspector of Stock (Mr. C. A. Loxton), who, among other matters, conducted a post-mortem examination on a horse.

The Chief Agricultural Instructor (Mr. W. J. Spafford) addressed the gathering on the subject, "Top Dressing of Pastures." In "Free Parliament," resolutions were carried asking "that the Department of Agriculture should be allowed a sufficient sum of money to enable operations to be undertaken on the area of land set aside for experimental purposes in the hundred of MacGillivray;" also requesting "that an officer of the Department be sent to the island to advise farmers on the treatment of soils for crops and pastures." It was decided that the Conference should meet in 1926 at Penneshaw.

A number of farms were visited by the officers of the Agricultural and Stock Departments, and the owners advised on stock and agricultural questions.

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J. W. MCGREGOR.

Pastoral and Agricultural Inspector
Manager

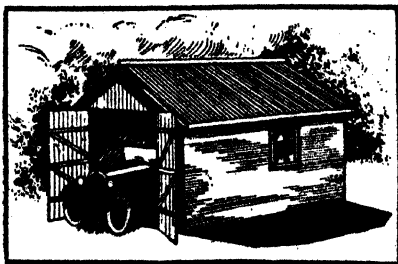
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MILANG HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR DECEMBER, 1924.

Herd No.	Average Cows in Herd.	Average Cows in Milk.	Milk.			Butterfat.		
			Per Herd during December.	Per Cow during December.	Per Cow May to December.	Per Herd during December.	Per Cow during December.	Per Cow May to December.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
4/A	26	20-68	7,482-5	287-79	3,779-21	360-34	13-86	165-01
4/B	38-97	31-58	12,536-5	321-70	3,607-75	559-59	14-36	142-59
4/C	28-29	23-74	14,280	504-77	3,168-59	634-48	22-43	129-67
4/D	23	21-35	12,235-5	531-98	6,102-40	511-26	22-23	234-31
4/E	20-81	16-90	5,003-5	269-27	3,523-11	238-57	11-46	135-11
4/F	20	14-68	5,792-5	289-63	3,225-21	268-32	13-42	138-54
4/G	27	21-1	7,752	287-11	3,159-51	340-88	12-63	124-68
4/H	31-13	27-55	13,480-5	433-04	3,902-16	575-18	18-48	160-75
4/I	30-90	28-90	16,102	521-10	3,475-73	722-25	23-38	152-79
4/J	48-97	41-52	29,907-5	610-73	3,667-99	1,196-73	24-44	137-88
4/K	15-16	15-71	7,197	449-81	3,322-90	327-43	20-46	146-47
4/L	32-39	26-81	13,590	419-57	3,092-86	688-06	21-24	146-07
4/M	23	19-32	7,577-5	329-46	3,360-68	334-48	14-54	132-91
4/N	41-81	38-71	15,389-5	368-08	5,197-97	628-10	15-02	212-05
4/O	43	42	19,106	444-33	5,274-22	812-60	18-90	215-93
4/P	63-94	51-71	17,836	278-95	2,271-24	734-15	11-48	87-49
4/Q	50-19	37-55	30,126-5	600-34	3,481-42	1,197-41	23-86	138-08
4/R	15-32	14-32	7,071	461-55	4,290-40	341-93	22-32	197-31
Means	32-26	27-45	13,503-67	418-56	3,717-90	581-76	18-03	151-46



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RIVER MURRAY HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR DECEMBER, 1924.

Herd No.	Average Cows in Herd.	Average Cows in Milk.	Milk.			Butterfat.		
			Per Herd during December.	Per Cow during December.	Per Cow October to December.	Per Herd during December.	Per Cow during December.	Per Cow October to December.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1/J	15-45	10-77	7,988-5	517-06	1,705-66	351-71	22-76	71-61
1/L	18-23	13-48	9,453	518-54	1,584-93	387-77	21-27	67-01
1/M	19	15-74	12,934-5	680-76	1,873-44	614-55	32-34	95-32
1/E	21	16	10,044	478-28	1,726-15	440-68	20-98	74-77
1/G	25-48	22	20,980	823-39	2,599-58	843-87	33-12	100-07
1/T	14	10-03	8,816	629-71	1,676-96	424-81	30-34	84-47
1/X	19	15-77	12,382	651-68	1,937-36	537-83	28-31	86-72
1/EE	26-81	23-71	14,569-5	543-43	1,492-99	680-65	25-39	67-21
1/Ff	16	13-61	9,802	612-62	2,062-40	438-15	27-38	91-93
1/Gg	23	16-61	13,257-5	576-41	1,491-74	579-90	25-21	65-70
1/H	21-61	19-29	15,318	708-84	2,405-55	688-12	31-84	105-01
1/Jj	22-29	15-48	8,464-5	379-74	1,469-84	388-03	17-41	67-63
1/Mm	19-39	9-84	7,282	375-56	928-66	328-43	16-94	42-72
1/Nn	17	17	12,415-6	730-32	2,354-94	525-71	30-92	94-83
1/Oo	18-35	16-16	13,102	714-01	2,089-63	554-99	30-24	94-00
1/Pp	24	15	13,562-5	565-10	1,434-05	519-31	21-64	53-21
Means	20-04	15-66	11,898-22	593-78	1,794-05	519-03	25-90	78-23

MOUNT GAMBIER HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR JANUARY, 1925.

Herd No.	Average Cows in Herd.	Average Cows in Milk.	Milk.			Butterfat.		
			Per Herd during January.	Per Cow during January.	Per Cow August to January.	Per Herd during January.	Per Cow during January.	Per Cow August to January.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
2/K	27	21-84	16,317-5	604-35	3,532-47	701-29	25-97	147-93
2/L	23	21-32	13,434	584-09	3,451-62	617-23	26-84	153-00
2/Y	13-74	12-74	8,033-5	584-68	4,811-23	323-44	23-54	194-58
2/Dd	19-81	19-81	11,839	597-62	5,224-68	466-13	23-53	223-30
2/Ee	16	14-39	7,887-5	492-96	4,570-00	367-94	23-00	201-71
2/Ff	11	11	7,858-5	714-41	5,522-15	320-36	29-12	228-53
2/Gg	12	9-16	4,592-5	382-71	3,703-95	197-86	16-49	151-90
2/Hh	10	10	5,363	536-30	4,843-67	217-66	21-77	190-16
2/Ii	11	10-42	5,203-5	473-04	4,869-22	241-71	21-97	210-21
2/Jj	28	21-58	11,809-5	421-77	2,912-38	469-08	16-75	111-74
Means	17-16	15-23	9,233-85	538-26	4,044-59	392-27	22-87	168-17

IMPORTS AND EXPORTS OF FRUITS, PLANTS, ETC., JANUARY, 1925.

IMPORTS.

Interstate.

Apples (bushels)	10
Bananas (bushels)	8,121
Currants, black (packages)	1
Oranges (bushels)	1
Passion fruit (bushels)	85
Peaches (bushels)	12
Pears (bushels)	4
Pineapples (bushels)	203
Plums (bushels)	4
Tomatoes (packages)	25
Cucumbers (packages)	1
Nuts (packages)	3
Onions (bags)	60
Potatoes (bags)	9,544
Bulbs (packages)	33
Plants (packages)	21
Seeds (packages)	60
Wine casks, empty	3,199

Fumigated—105 second-hand crates.

Rejected—93bush. bananas, 10bush. pineapples, 3 second-hand cases.

Overseas.

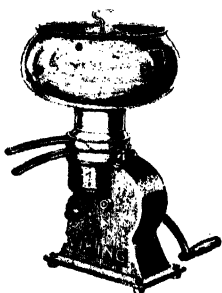
Federal Quarantine Act.

4,407 packages seeds, etc.

EXPORTS.

Federal Commerce Act.

660 packages of dried fruit were exported—550 to London, 110 to New Zealand.



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DAIRY AND FARM PRODUCE MARKETS.

A. W. Sandford & Co., Limited, reported on March 2nd, 1925:—

BUTTER.—Since our last report it is pleasing to note that values for top grades advanced 3d. per lb. in sympathy with the improvement in values on the London market. The lower grades, however, have only advanced 1d. per lb., as overseas buyers are not operating to any great extent, eagerly purchasing any surplus parcels of choicest quality. The local trade has been exceptionally brisk for choicest 1lb. prints, and most satisfactory values were secured for private consignments of separators and dairies and store and collectors' lines. Values at the end of the month:—Choicest quality factory and creamery fresh butter in bulk, 1s. 6½d.; first grade bulk, 1s. 1½d.; second and third grade bulk, 11½d. to 1s.; best separators and dairies, 1s. 3d. to 1s. 5½d.; fair quality, 11½d. to 1s. 2½d.; store and collectors' lines, 10½d. to 1s. 0½d.; heated lots, 9d. to 9½d. per lb.

EGGS.—For some weeks past interstate buyers have not been operating to any great extent, but with local demand being keen and a seasonable shrinkage in supplies, values have advanced considerably, the present price for fresh hen being 1s. 2d.; duck, 1s. 3d. per dozen.

CHEESE.—Forwardings from the South-Eastern factories each week have been fairly substantial, but as a good local trade has existed and weekly orders have been received from Western Australian buyers, good clearances were effected. In fact, towards the end of the month a slight shortage was felt with medium-size cheese. Values throughout were stationary—the range for new makes being from 7½d. to 8½d. per lb. for large to loaf; semi-matured and matured realising 9d. to 10½d. per lb. for large to loaf.

HONEY.—Most districts this year have experienced a very heavy take, and daily large quantities are coming to hand, and as the sales are dull—there being practically no local demand, only a few interstate orders—values have receded ½d. to ¾d. per lb. for the new season's prime clear extracted in liquid condition, which is realising 3½d. to 3¾d.; lower grades down to 2d.; beeswax, saleable, at 1s. 4d. to 1s. 4½d. per lb.

ALMONDS.—Numerous interstate inquiries have come to hand for this line, but only business on a small scale is being done locally, as the market is rather bare of new season's supplies. With kernels the high prices still rule; in fact, the forwardings are hardly equal to the demand. Brandis, 8½d. to 9d.; mixed soft-shells, 7½d. to 8d.; hardshells, 4½d. to 4¾d.; kernels, 2s. 1d. to 2s. 1½d. per lb.

BACON.—During the period under review this commodity has experienced an exceptionally heavy turnover, and the trade has had some difficulty in securing its requirements of hams and rolls, which forced merchants to bring along big parcels from the Eastern States. Supplies of sides and middles have been ample, and claimed better attention. Best local hams, 1s. 8d.; best factory-cured sides, 1s. 3½d. to 1s. 4d.; best factory-cured middles, 1s. 4½d. to 1s. 5d.; Hutton's "Pineapple" sides, 1s. 3d.; Hutton's "Pineapple" middles, 1s. 7d.; Hutton's "Pineapple" rolls, 1s. 3d.; Hutton's "Pineapple" hams, 1s. 8d. to 1s. 9d. per lb.

LARD.—Hutton's "Pineapple" brand lard in packets, 9d.; in bulk, 8d. per lb.

LIVE POULTRY.—As mentioned in our previous report, heavier quantities were being marketed owing to the high cost of wheat, and as many of the consignments consisted of light-breed birds, values for these consignments were fairly low. However, during the last few weeks the quality of the majority of the forwardings has improved considerably, and values throughout have advanced—especially for well-conditioned birds. Apparently poulterers, restaurant keepers, &c., have only light stocks on hand, and according to the bidding of the last few markets it is anticipated that these good rates should rule for some time to come. We advise consigning. Crates obtainable on application. The following rates ruled at our last auction:—Prime roosters, 5s. to 7s.; nice-conditioned cockerels, 3s. to 4s. 6d.; fair-conditioned cockerels, 2s. 6d. to 2s. 11d.; plump hens, 3s. to 4s. 9d.; medium hens, 2s. to 2s. 9d.; light hens lower. Geese, 5s. to 7s. 3d.; ducks, good-conditioned, 4s. 6d. to 6s.; ducks, fair conditioned, 2s. 6d. to 4s.; turkeys, good to prime conditioned, 1s. 3d. to 1s. 8d. per lb. live weight; turkeys, fair conditioned, 1s. to 1s. 2d.; turkeys, fattening sorts lower; pigeons, 7d. each.

POTATOES.—Prime new potatoes at 8s. 6d. to 10s. per cwt. on rail.

ONIONS.—Best new brown onions at 9s. to 10s. per cwt. on rail.

RAINFALL TABLE

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of, and to the end of February, 1925, also the average precipitation to the end of February, and the average annual rainfall.

Station.	For Feb., 1925.	To end Feb., 1925.	Av. end Feb.	Av'ge. Annual Rainfall	Station.	For Feb., 1925.	To end Feb., 1925.	Av. end Feb.	Av'gs. Annual Rainfall
FAR NORTH AND UPPER NORTH.					LOWER NORTH—continued.				
Oodnadatta	—	0.93	1.35	4.96	Gulnare	1.05	2.20	1.31	19.48
Marree	1.68	2.27	0.91	6.03	Yacka	1.60	2.19	1.07	15.56
Farina	2.14	2.95	1.08	6.66	Koolunga	0.22	1.55	1.23	15.95
Copley	1.26	1.60	1.14	8.35	Snowtown	0.97	1.20	1.09	16.09
Beltana	0.50	3.26	1.40	8.95	Brinkworth	2.18	3.48	1.08	16.39
Blinman	1.52	2.54	1.74	12.51	Blyth	0.58	1.27	1.28	17.07
Taroocla	0.76	1.35	1.16	7.64	Clare	1.19	2.19	1.62	24.80
Hookina	0.10	0.50	1.08	13.29	Mintaro	0.81	1.75	1.30	23.86
Hawker	0.71	1.58	1.19	12.94	Watervale	0.52	1.21	1.63	27.64
Wilson	0.38	0.92	1.30	12.63	Auburn	0.62	1.36	1.79	24.41
Gordon	2.06	3.35	1.37	11.52	Hoyleton	0.48	1.17	1.26	17.91
Quorn	0.44	0.89	1.32	14.26	Balaklava	0.39	1.30	1.23	15.98
Port Augusta	0.22	0.44	1.05	9.68	Port Wakefield	0.13	0.37	1.19	13.28
Port Augusta West	0.21	0.46	0.96	9.70	Terowie	2.23	4.06	1.53	13.82
Bruce	0.21	0.52	1.11	10.79	Yarcowie	2.99	3.82	1.40	14.19
Hammond	0.07	0.55	1.38	12.02	Hallett	2.55	3.54	1.30	16.53
Wilmington	0.37	0.70	1.46	18.41	Mount Bryan	1.46	2.35	1.23	17.13
Willowie	0.12	0.45	1.18	12.79	Koorunga	0.37	0.98	1.40	18.14
Melrose	1.58	1.94	2.10	23.53	Farrell's Flat	0.24	1.14	1.34	19.09
Boolearoo Centre	1.02	1.46	1.40	15.82	WEST OF MURRAY RANGE.				
Port Germein	0.15	0.44	1.14	12.90	Manoora	0.44	1.17	1.14	19.12
Wirrbarra	0.51	1.09	1.35	19.85	Saddleworth	0.84	1.20	1.44	19.89
Appila	0.42	1.39	1.30	15.05	Marrabel	0.68	0.99	1.28	20.00
Cradock	1.00	1.83	1.25	11.53	Riverton	0.61	0.92	1.41	20.97
Carrieton	0.25	1.12	1.38	12.95	Tarlee	0.60	1.02	1.37	18.18
Johnburg	0.41	1.66	1.14	10.99	Stockport	0.80	1.31	1.32	16.69
Eurelia	0.16	1.57	1.44	13.62	Hamley Bridge	1.27	1.85	1.38	16.82
Orroroo	0.18	0.92	1.67	13.73	Kapunda	0.33	1.30	1.62	20.04
Nackara	3.10	4.56	1.37	11.85	Freeling	0.88	1.39	1.34	18.19
Black Rock	0.21	1.17	1.37	12.83	Greenock	0.59	1.25	1.45	21.93
Uoolta	0.32	1.62	1.42	11.91	Truro	0.92	1.47	1.39	20.43
Peterborough	0.46	1.95	1.46	13.60	Stockwell	1.02	1.75	1.38	20.58
Yongala	0.70	2.37	1.36	14.73	Nuriootpa	1.13	1.62	1.40	21.17
LOWER NORTH-EAST.					Angaston	1.17	1.85	1.45	22.71
Yunta	0.95	1.33	1.33	8.79	Tanunda	0.57	1.09	1.48	22.40
Waukaringa	0.63	1.45	1.09	8.47	Lyndoch	0.65	1.00	1.38	23.41
Mannahill	0.98	1.90	1.36	8.62	Williamstown	1.10	1.62	1.54	27.75
Cookburn	0.08	1.16	1.28	8.29	ADELAIDE PLAINS.				
Broken Hill, N.S.W.	0.61	2.48	1.53	9.99	Owen	1.86	2.36	—	—
LOWER NORTH.					Mallala	2.37	2.59	1.27	16.92
Port Pirie	0.18	0.48	1.13	13.58	Roseworthy	0.41	0.63	1.27	17.59
Port Broughton	—	0.26	1.12	14.33	Gawler	0.51	1.11	1.38	19.24
Bute	0.79	1.10	1.10	15.90	Two Wells	1.42	1.57	1.18	16.03
Laura	0.31	1.51	1.35	18.34	Virginia	1.49	1.66	1.25	17.51
Caltowie	0.43	1.63	1.35	17.27	Smithfield	0.73	0.96	1.15	17.62
Jamestown	0.99	2.11	1.28	18.04	Salisbury	0.57	0.82	1.35	18.75
Gladstone	0.23	0.87	1.24	16.42	North Adelaide	6.92	7.24	1.42	22.66
Crystal Brook	1.15	1.59	1.24	16.00	Adelaide	6.09	6.49	1.39	21.18
Georgetown	0.30	1.17	1.34	18.64	Glenselg	1.64	1.72	1.22	18.63
Narriady	0.58	1.17	1.16	16.36	Brighton	1.11	1.20	1.40	21.60
Redhill	0.43	0.95	1.22	17.38	Mitcham	3.06	3.56	1.46	24.54
Spalding	1.82	2.83	1.29	20.24	Glen Osmond	2.53	3.09	1.59	26.34
					Magill	1.65	2.12	1.58	25.81

RAINFALL—continued.

Station.	For Feb., 1925.	To end Feb., 1925.	Av. end Feb.,	Av'ge Annual Rainfall	Station.	For Feb., 1925.	To end Feb., 1925.	Av. end Feb.	Av'ge Annual Rainfall
MOUNT LOFTY RANGES.					WEST OF SPENCER'S GULF—continued.				
Teatree Gully.....	1.30	1.96	1.63	28.32	Dark's Peak	0.76	1.36	1.58	16.43
Stirling West	3.41	4.53	2.57	47.30	Kimba	0.81	0.98	1.65	15.85
Uraidla	2.53	4.44	2.32	44.79	Wudinna	1.26	1.95	—	—
Clarendon	2.62	3.44	2.08	33.29	Minnipa	2.33	2.38	1.73	15.32
Morphett Vale	1.18	1.86	1.44	23.07	Tumby	0.32	0.97	0.72	14.62
Noarlunga	0.90	1.33	1.25	20.56	Carrow	0.52	0.52	2.07	14.31
Willunga	2.16	3.25	1.51	26.09	Arno Bay	0.43	0.67	0.97	13.01
Aldinga	0.87	1.45	1.33	20.56	Cleve	0.17	1.44	1.12	—
Myponga.....	1.10	1.68	1.82	30.35	Cowell	0.33	1.01	0.99	11.57
Normanville	0.65	1.11	1.26	20.88	YORKE PENINSULA				
Yankalilla.....	0.56	0.87	1.28	23.59	Wallaroo	0.10	0.67	1.02	14.19
Mount Pleasant	1.29	2.05	1.54	27.62	Kadina	0.01	0.60	0.97	16.08
Birdwood	1.09	1.59	1.75	29.78	Moonta	0.03	0.56	0.90	15.39
Gumeracha	1.22	1.76	1.85	33.69	Green's Plains	0.07	0.55	0.97	15.97
Millbrook Reservoir	1.13	1.73	2.10	38.63	Maitland	0.23	0.79	1.16	20.31
Tweedvale	2.17	2.70	1.80	36.12	Ardrossan	0.18	0.42	0.93	14.25
Woodside	1.46	1.92	1.83	32.48	Port Victoria	0.21	0.41	0.92	15.62
Ambleside.....	2.01	2.58	1.86	25.23	Curramulka	0.30	0.78	1.05	18.31
Nairne	1.37	1.83	1.81	28.63	Minlaton	0.32	0.67	0.96	18.06
Mount Barker	1.19	1.65	1.91	31.54	Brentwood	0.54	0.51	0.82	16.02
Echunga	3.32	4.19	1.86	33.41	Stahsbury	0.33	0.33	1.04	17.15
Macclesfield	2.84	3.80	1.68	30.90	Warooka	0.30	0.39	0.95	17.97
Meadows	2.55	3.35	1.88	36.61	Yorketown	0.86	1.03	0.91	17.35
Strathalbyn	1.92	2.60	1.38	19.45	Edithburgh	0.67	0.75	0.99	16.70
MURRAY FLATS AND VALLEY.					SOUTH AND SOUTH-EAST.				
Meningie	1.19	1.67	1.21	18.83	Cape Borda	0.82	1.00	1.13	25.13
Milang	1.29	1.92	1.19	15.47	Kingscote	0.56	0.67	0.98	19.15
Langhorne's Creek	2.31	3.14	0.99	14.88	Penneshaw	0.40	0.45	1.34	19.63
Wellington	1.83	2.32	1.25	14.85	Victor Harbor	0.66	0.97	1.43	21.61
Tailem Bend	2.62	3.18	1.10	14.92	Port Elliot	1.17	1.66	1.37	20.17
Murray Bridge	1.29	1.82	1.11	13.98	Goolwa	2.19	2.63	1.32	17.87
Callington	1.08	1.63	1.24	15.56	Meribah	1.04	1.80	—	—
Mannum	1.49	2.05	0.96	11.66	Alawoona	0.90	1.37	—	—
Palmer	1.68	2.12	1.07	15.58	Mindarie	1.49	2.09	0.72	12.39
Sedan	1.20	1.77	1.04	12.37	Sandalwood	1.49	2.16	1.13	14.98
Swan Reach	1.84	2.48	1.08	11.05	Karoonda	1.75	2.45	1.00	15.32
Blanchetown	1.23	1.59	1.05	10.01	Pinnaroo	1.43	2.46	1.46	15.60
Eudunda	2.06	2.48	1.31	17.53	Parilla	1.76	2.21	0.97	14.77
Sutherlands	0.92	1.24	0.84	11.27	Lameroo	2.66	3.70	1.20	16.51
Morgan	3.53	4.52	0.96	9.26	Parrakie	3.81	4.46	0.94	14.83
Waikerie	2.77	3.42	3.07	9.79	Geranium	2.56	3.46	0.97	16.83
Overland Corner ..	2.08	2.35	1.13	10.15	Peake	2.02	2.71	1.31	16.86
Loxton	0.71	1.69	1.60	12.36	Cooke's Plains	2.43	3.25	1.02	15.31
Renmark	0.98	1.90	1.23	10.98	Coomandook	1.98	2.80	1.04	17.50
Monash	1.43	1.95	—	—	Coonalpyn	1.83	2.42	1.16	17.51
WEST OF SPENCER'S GULF.					Tintinara	3.60	4.27	1.10	18.89
Eucla.....	1.53	4.26	1.18	9.98	Keith	1.20	1.06	1.24	18.38
Fowler's Bay	0.55	0.85	0.88	12.14	Bordertown	2.19	2.63	1.35	19.46
Penong	0.12	0.21	1.34	12.61	Wolsley	1.66	2.23	1.15	18.31
Ceduna	0.87	0.91	0.47	10.25	Frances	2.43	2.93	1.80	19.03
Smoky Bay	0.47	0.53	0.92	11.16	Naracoorte	0.70	1.43	1.47	22.63
Petina	0.21	0.41	0.93	13.12	Penola	2.22	2.98	1.79	23.10
Streaky Bay	0.43	0.92	0.95	15.11	Lucindale	0.95	1.43	1.25	24.53
Talia	0.50	0.66	0.71	15.36	Kingston	1.82	1.83	1.34	24.71
Port Elliston	0.36	0.56	0.81	16.66	Robe	1.29	2.13	1.43	27.14
Port Lincoln	0.47	0.48	1.05	19.71	Beachport	0.44	0.93	1.67	29.51
Gummina	0.33	1.82	0.97	18.85	Millicent	1.86	2.79	1.85	33.25
Yeelama	0.41	0.79	0.63	—	Kalangadoo	3.35	4.18	1.93	31.25
Ungarie	0.58	0.97	0.83	17.35	Mount Gambier ..	2.79	3.66	2.34	36.63

AGRICULTURAL BUREAU REPORTS.

INDEX TO CURRENT ISSUE AND DATES OF MEETINGS.

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		Mar.	April			Mar.	April
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Aldinga	•	11	8	Georgetown	•	7	4
Allandale East	784	6	3	Geranium	•	28	25
Alma	762	3, 31	28	Gladstone	†	6	3
Amyton	•	9	6	Glencoe	•	12	9
Angaston	•	—	—	Glossop	•	4	1
Appila-Yarrowie	•	—	—	Goode	•	11	8
Arthurton	•	—	—	Green Patch	†	9	6
Ashbourne	•	—	—	Gulnare	•	—	—
Balaklava	•	14	11	Gumeracha	•	9	6
Balhannah	782	13	3	Halidon	•	—	—
Barmera	†	9	6	Hartley	•	—	—
Beetaloo Valley	768	—	—	Hawker	•	10	7
Belalie North	•	7	4	Hilltown	•	—	—
Berri	•	11	8	Hookina	•	5	9
Bethel	•	3	4	Inman Valley	•	—	—
Big Swamp	•	—	—	Ironbank	•	6	3
Blackheath	•	6	3	Kadina	770	—	—
Black Springs	•	—	—	Kalangadoo (Women's)	782	14	11
Blackwood	†	16	20	Kalangadoo	•	14	11
Block E	•	—	—	Kangarilla	•	—	—
Blyth	761	7	4	Kanmantoo	•	7	4
Booleroo Centre	758	6	3	Karoonda	•	11	8
Borrika	•	—	—	Keith	•	—	—
Brentwood	767-8	5	9	Ki Ki	•	—	—
Brinkley	772	7	4	Kilkerran	770	3	7
Brinkworth	760	9	6	Kimba	•	—	—
Bundaleer Springs	•	—	—	Kingston-on-Murray	•	—	—
Bute	•	5	9	Kongorong	•	9	6
Butler	•	—	—	Koombba	•	5	9
Calca	•	—	—	Koppio	•	9	6
Cadell	•	—	—	Kringin	†	7	4
Canowie Belt	•	—	—	Kybyholite	•	10	7
Carrov	•	4	8	Lake Wangary	•	7	4
Charra	770	4	8	Lameroo	•	7	4
Cherry Gardens	770	—	—	Laura	†	7	11
Clanfield	†	—	—	Leaswood and Forest Range	•	—	—
Clare	763	—	—	Light's Pass	767	5	6
Clarendon	•	—	—	Lipson	•	—	—
Claypan Bore	•	8	8	Lone Gum and Monash	•	4	8
Cleve	•	4	8	Lone Pine	†	—	—
Cobdogla	•	—	—	Longwood	†	—	—
Collie	•	—	—	Lexton	•	—	—
Colton	•	7	4	Lucindale	•	—	—
Coomandook	†	4	8	Lyndoch	767	12	9
Coomalpyne	•	6	10	McLachlan	†	—	—
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Crystal Brook	•	7	4	MacGillivray	•	3	7
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Currency Creek	778	6	10	Mallala	•	16	20
Cygnat River	•	5	9	Maltee	•	6	3
Darke's Peak	•	—	—	Mangalo	•	—	—
Denial Bay	•	—	—	Mannanarie	•	5	9
Edillilie	•	7	4	Marama	•	—	—
Elbow Hill	•	10	14	Meadows	•	11	8
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Minlaton	•	6	3	Rosedale	†	—	—
Minnipa	•	4	8	Rosy Pine	•	—	—
Monarto South	776	7	4	Rudall	•	5	9
Moonta	•	6	3	Saddleworth	•	—	—
Moorak	•	6	9	Saddleworth	•	—	—
Moorook	•	9	6	(Women's)	•	13	10
Morchard	757	7	4	Salisbury	•	3	7
Morphett Vale	•	12	9	Salt Creek	•	—	—
Mount Barker	†	4	8	Sandalwood	•	—	—
Mount Bryan	761	—	—	Shoal Bay	780	—	—
Mount Bryan East ..	•	—	—	Smoky Bay	•	7	4
Mount Gambier	•	14	11	Spalding	•	20	17
Mount Hope	•	7	4	Stirling	780	7	4
Mount Pleasant	•	13	—	Stockport	767	12	9
Mount Remarkable ..	•	—	—	Streaky Bay	•	14	11
Mount Schank	•	10	7	Strathalbyn	•	3	7
Mundalla	•	—	8	Talia	•	14	11
Murray Bridge	•	—	—	Tantanoola	783	7	4
Murraytown	•	—	—	Taplan	•	3	7
Mypolonga	•	9	4	Tarcowie	†	10	7
Myrla	•	7	4	Tarlee	†	—	—
Nantawarra	767	5	9	Tatiara	781	12	9
Naracoorte	•	14	11	Tweedvale	•	—	—
Narridy	•	7	11	Two Wells	•	—	—
Narrung	•	14	11	Uraidla & Summertown	•	2	6
Neeta	•	—	—	Veitch	•	—	—
Nelshaby	•	7	4	Virginia	•	4	8
Netherton	•	4	8	Waikerie	772, 776	14	11
New Residence	776	4	8	Wall	•	—	—
North Booborowie ..	•	10	7	Wanbi	•	—	—
North Bundaleer	•	—	—	Warcowie	•	3	7
Nunkeri and Yurgo ..	•	4	8	Watervale	•	—	—
O'Loughlin	•	—	—	Weavers	767	9	6
Orroroo	•	—	—	Wepowie	•	9	6
Owen	•	6	3	Whyte-Yarcowie	•	9	6
Parilla	•	6	4	Williamstown	766	6	3
Parilla Well	•	9	6	(Women's)	767	6	3
Paruna	•	—	—	Williamstown	•	4	8
Paskeville	†	6	3	Willowie	776	—	—
Pata	•	—	—	Wilkwatt (Women's)	•	4	8
Penola	•	7	4	Wilmington	•	3	7
Penneshaw	782	9	13	Windsor	•	—	—
Petina	•	28	25	Winkie	•	—	—
Pinnaroo	•	6	10	Wirrabara	761	—	—
Pinnaroo (Women's).	•	6	3	Wirrega	•	—	—
Pompoota	•	11	8	Wirrilla	•	7	4
Poochera	•	4	1	Wirrulla	•	—	—
Port Bronghton	•	6	3	Wookata	•	—	—
Port Elliot	•	21	18	Wudinna	•	—	—
Port Germein	•	14	11	Wynarka	†	—	—
Pygery	•	7	4	Yacka	•	3	7
Ramco	•	9	6	Yadmarie	•	3	7
Rapid Bay	†	7	4	Yallunda Flat	•	—	—
Redhill	761	—	—	Yaninee	•	—	—
Rendelsham	•	9	6	Yeelanna	•	7	4
Renmark	•	5	9	Yongala Vale	•	—	—
Riverton	•	—	—	Yorketown	•	—	—
Riverton (Women's).	•	—	—	Youngusband	•	12	9

* No report received during the month of February.

† Formal.

‡ Held over until next month.

THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA

Every producer should be a member of the Agricultural Bureau. A postcard to the Department of Agriculture will bring information as to the name and address of the secretary of the nearest Branch.

If the nearest Branch is too far from the reader's home, the opportunity occurs to form a new one. Write to the department for fuller particulars concerning the work of this institution.

REPORTS OF BUREAU MEETINGS.

UPPER-NORTH DISTRICT.

(PETERBOROUGH AND NORTHWARD.)

MORCHARD.

February 7th.—Present: 13 members and visitors.

EXHIBIT NIGHT AND QUESTION BOX.—Mr. B. S. McCallum tabled an improved spreader, made of lin. piping, two pieces of steel being shaped in the form of a bow, placed over a link inside each end of the piping, and drilled and rivetted in that position. Mr. A. Twigden tabled an excellent sample of Joffre wheat. A sample of Bowman's (a hay wheat) was shown by Mr. F. Scriven. The sheaf was 3ft. 4in. high, and was taken from a paddock that was fed off "bare" until the end of September.

WEPOWIE, February 9th.—The meeting was devoted to a review of the 1924-25 harvest, which aroused an interesting and instructive discussion.

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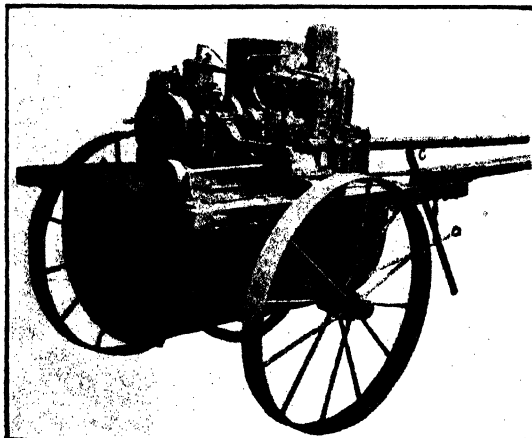
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MIDDLE-NORTH DISTRICT.

(PETERBOROUGH TO FARRELL'S FLAT.)

BEETALOO VALLEY (Average annual rainfall, 23.50in.).

February 9th.—Present: eight members and four visitors.

FARM MANAGEMENT.—In the course of a paper, "Best Method of Farming in this District," Mr. P. Curtin said the Beetaloo Valley district was very hilly, and a marked contrast to most of the farming areas of the State. He suggested that fallowing should be commenced about the middle of July, because if an earlier start was made the ground "caked," and was very difficult to work satisfactorily. A farmer who cropped about 250 acres should sow fallowed land only. A team of 10 horses and a five-furrow plough would be required, and with good feeding and careful driving the work should be completed by the end of September. He recommended ploughing the land up and down the hills, so that any risk of the soil washing away would be reduced to a minimum. The fallow should be harrowed as soon as possible after it was ploughed. It should be worked early in October with a tyne cultivator, and if done thoroughly should require very little more except harrowing until after harvest, especially if the farmer had sheep on the farm. The fallow should again be run over with a spring-tooth cultivator about March or April to kill all early weeds. Seeding should be started about a fortnight after the first rain, toward the end of April or in May. It was better to wait for rain before drilling, even if rain did not come until the middle of June, than to sow dry. Seeding could be done with the combine, the harrows being worked after the seed was sown. Any weedy patches of land should be run over again with the combine out of gear. Good seed, free from barley, and bunt should be sown. Florence and Currawa were the best wheats for the district. He recommended nothing less than 1½cwt. super with 1½bush. to 1½bush. of seed to the acre. Hay cutting should be started as soon as the crops were ready, and be completed without any unnecessary delay. He recommended cutting a little more than was actually required, because it was always advisable to have a reserve supply of fodder. When the wheat was ripe, the crops should be taken off with all haste, because if hot winds prevailed, the easily thrashed wheats shook out with a considerable loss to the farmer. He suggested that the farmer should "let" the wheat carting so that the grain would be carted without delay and thereby save loss of weight, and sometimes re-bagging should the grain become wet.

HOW TO MAKE FARM LIFE MORE ATTRACTIVE.—Mr. J. Halse read a paper from which the following is taken:—"To make farm life more attractive is one of the most difficult and most important problems that rural communities have to solve, especially when one realises that over 50 per cent. of the population of the State is living in the metropolitan area. Two ways that will help to solve this question are, first, Government assistance, and second, the aid of the farmer. As to the first, I suggest that in the outback or isolated areas the Government should assist either with building or subsidising the erection of places of entertainment and recreation grounds. For the farmer's part, he could help by making home life as attractive as possible. All buildings on the farm should be up-to-date, and equipped with the latest of modern labor-saving conveniences. The hobbies of the children should be encouraged in every way. Workmen should receive a living wage, and not be asked to work more than reasonable hours. Saturday afternoons and public holidays should be allowed off, and, in addition to wages, the farm hand could be given a small commission from the profits derived from his labor. Such treatment would help to make the man more energetic and anxious to get out and do for himself."

BOOLEEROO CENTRE.

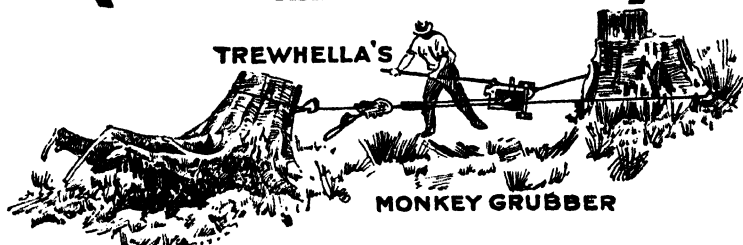
February 6th.—Present: 12 members.

HARVEST REPORTS.—Mr. A. Whibley reported that the land on his farm which he considered had received the best cultivation gave the poorest results, whilst that to which he had not been able to devote very much time gave the highest yields. His crop of Federation had been most disappointing. Mr. L. Michael said Currawa and Caliph proved to be the best wheats during the past year. Land that had been well worked gave disappointing returns. It was also noticed that land worked deeply

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during summer did not give good results. Mr. C. Llewelyn said his crops, although light, were better than he expected earlier in the season. Daphne was his best wheat, with Currawa and Queen Fan next. Mr. C. W. Paterson reported sowing Golden Return on fallow, late in the season, and it proved the best wheat. Federation was about equal to Currawa. The fallow that had received a light cultivation during summer gave good results. Mr. H. Reichstein's best crop had been secured from Currawa sown late in the season on late fallow. He had noticed that Currawa, if sown early, grew too much straw, and did not yield as well as was expected. He had good results from a small quantity of Gressley wheat which he procured from New South Wales. Mr. A. Whibley reported that when pickling seed he left one bag in the cask for about 20 minutes, taking careful notice of the particular bag. The seed it contained germinated as well as the other seed, and did not have any smut, whilst the wheat alongside had a few balls of smut. Daphne had given good results. Mr. W. A. Mills reported light crops which he attributed to the season and rubbish on the land. Daphne was his best wheat. He thought yields had been somewhat decreased by working the land during February.

BRINKWORTH.

February 9th.—Present: 18 members, six visitors.

HARVEST REPORTS.—Mr. F. J. Pedler reported that he had grown 11 varieties of wheat during 1924-25 season. Brevette and Yandilla King were sown at the end of April and yielded 23bush. and 19bush. respectively, both varieties being slightly touched with rust. Zealand Blue sown early in May was cut for hay. Joffre sown May 23rd to 26th yielded 27bush. and showed no sign of rust. Sixteen bush. were secured from Golden Return sown from May 27th to 31st, the crop being badly affected with rust. Sultan sown during the first week in June yielded 11 bags to the acre. Selected Golden Return was sown on June 11th and although very rusty, yielded 23bush. per acre. Wannon, a Victorian wheat, sown on June 12th, promised to yield heavily early in the season until attacked with rust, but only 15bush. per acre were secured. Huff's Imperial sown on June 13th yielded 23bush. per acre. Both Wannon and Huff's Imperial were very rusty. Dan, sown about the 18th June, was the next best yielder for the season, yielding 30bush. from a comparatively thin crop of straw, and was free from rust. Wagga, an early New South Wales wheat, sown about June 22nd yielded 27bush. Canberra, another early variety sown on June 24th, also yielded 27bush. The two last named varieties returned good samples, perfectly free from rust. Mr. O. F. Ottens, said seeding operations were commenced under dry and unfavorable conditions. When rain fell the germination of the dry sown pickled wheat was poor. Wheat sown about the beginning of June germinated much better, but owing to a prolonged dry spell in July was very much retarded in its growth, especially on light soil. Good rains in August improved the outlook of the season very much. During October and November red rust made an appearance. Late severe frosts were also noticed during those months, which, with red rust, seemed to considerably retard the yield for the season. Red rust was more severe on Golden Return, Federation, and German Wonder, and the grain of those varieties was badly pinched. The best varieties for the season were Daphne and Currawa. Smut Proof made better growth from the start than the late growing wheats such as Golden Return, German Wonder, and Minister. The only variety in which ball smut was noticeable was German Wonder. Owing to hot winds ripening the wheat too quickly, the sample was light. Mr. G. E. Ottens had sown Golden Return, Minister, German Wonder, Daphne, Golden King, and Smut Proof. The yield was not up to expectations. Golden Return was badly affected with rust, but other varieties gave a fair yield of a good sample of grain. Mr. Geo. Walladge said Currawa was the best crop on his farm. He pickled with bluestone, but the crop was badly affected with smut. Golden Return was badly affected with rust and gave a poor sample. Dan yielded a good return of wheat of a good quality. Mr. F. J. H. Hoepner sowed 6 varieties. Daphne sown dry and not pickled gave the best yield on the farm. Other members also gave reports, including Messrs. C. Provis, A. O. Walldhuter, G. L. Everett, C. A. Ottens, H. E. Ottens, F. W. Heinrich. A general discussion followed.

MOUNT BRYAN (Average annual rainfall, 15.8 in.).

February 7th.—Present: seven members.

SEED WHEAT.—Mr. J. O'Connors read the following paper:—"To secure satisfactory returns it is essential to sow good, plump grain, free from foreign matter. Seed wheat should be harvested carefully on a moderately cool day, so that there will be a minimum of cracked grain. The wheat should be carefully cleaned before sowing, in order that a good, even distribution of the grain through the drill will be assured. It is a good plan to sow an area of both early and late wheats, because some years early wheats give better yields than late wheats and *vice versa*, and this plan also facilitates harvesting, because the wheats ripen at different times. It is advisable to sow an early variety for hay, or a crop of oats would be better, because they are ready to cut earlier than most wheats, and this affords the farmer ample time to stack the hay before the wheat is ready to strip. The best variety of wheat for the district is undoubtedly "Federation." It yields well and stands a fair amount of rough weather without going down, and provided it is free from wild oats and thistles, does not shake badly. It makes a fairly good hay, excepting that it shells badly if handled in hot, dry weather. "Federation" tested over a period of years will average well above most other varieties. When reaping seed wheat with a harvester it is almost impossible to clean out all foreign wheats, but if the machine is cleaned out and a few of the first bags kept separate, a fair sample can be obtained. It is advisable to pickle to check smut, and if wheat has not been treated the previous year, then pickling is most essential. I do not favor strong pickling if wheat is free from smut, because it tends to spoil germination. I use a barrel for pickling, dipping a whole bag at a time. When this method is used, care must be taken not to fill bags too tightly, but plenty of room should be allowed for the swelling of the grain. It is a good plan to change seed wheat every few years, because wheat sown on the same land year after year is liable to be affected by smut."

BLYTH, February 7th.—The Hon. Secretary (Mr. A. Lyell McEwin) read a paper from the *Journal of Agriculture*, "The Need for Rotation Cropping and Its Value," and a good discussion followed.

REDHILL, February 10th.—The 1924-25 harvest was reviewed, which resulted in an interesting discussion in which each member took part.

WIRABARA, February 7th.—Mr. W. Stephens contributed a paper, "The Blacksmith Shop on the Farm," and an instructive discussion ensued.

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**LOWER-NORTH DISTRICT.
ADELAIDE TO FARRELL'S FLAT.)
ALMA.**

February 5th.—Present: 13 members.

HARVEST REPORTS.—In the course of a paper dealing with points of interest of the 1924-5 harvest, Mr. A. N. Freebairn said all varieties of wheat were affected, more or less, by rust, and its ravages considerably reduced the average yield. The hot winds which prevailed just as the wheat was ripening were also detrimental. The wheats least susceptible to rust proved to be Ford, Nabawa, Leak's, and Early Gluyas. Early Crossbred, King's White, Major, Marshall's No. 3, and Sultan were badly affected. On some holdings, Nabawa, Gluyas, and Major almost entirely escaped from rust, whilst on other holdings they were badly affected. The most successful wheat this year was undoubtedly Nabawa. Very favorable reports were given by all who grew that variety, and it appeared to suit all kinds of soil. There was a possibility, he thought, that its characteristics were such as to render it susceptible to the harmful influences of a dry spell. This season it proved to be the most prolific yielder, returning 36bush. to the acre. The stubble was not thick, but the grain was particularly large. The head was long and well packed. Early Gluyas was next, yielding 33bush. to the acre. Other varieties yielded in the following order:—Ford, Early Crossbred, Sultan, and King's White. Sultan, which had done so well in the past, fell somewhat in disfavor; nevertheless, it yielded eight bags to the acre.

Mr. R. McKenzie also read a paper, "Harvest Results," in the course of which he said he had sown five varieties of wheat. Of the total area sown, Gluyas and Ford comprised about one half. These varieties proved to be the best, with an average yield per acre of 29bush. Ford produced more straw. A plot of Ford was the first wheat sown, and yielded slightly less straw than that sown a fortnight later. Both varieties produced a very fine sample. About 30 acres were sown to Dan. The yield of that variety was disappointing, because it appeared to be easily the best crop at haycutting time. Many heads dropped off, and patches of take-all appeared. However, it stood up well, and should prove a heavy yielder. The crop yielded 24bush. per acre. Forty acres were sown with Sultan, which, although attacked with red rust, produced a heavy crop. Half the area was cut for hay. The remainder yielded 20bush., although, probably, 3bush. per acre were blown out with the chaff, on account of the difficulty experienced in threshing the rust-affected heads. A small plot of Nugget yielded only five bags per acre, although the quantity of straw indicated a 30bush. crop. Barley again proved its superiority as a grain yielder—34bush. per acre of malting barley were reaped from roughly ploughed stubble ground. Oats sown on stubble ground were rather thin and stunted, but the hay cut should make good horse feed; 30 acres sown dry did not yield as well as that sown after the first good rains. Eight acres of Kherson oats did not uphold the reputation of that variety oat as a storm resister, much grain being shed. Climatic conditions were favorable throughout the harvest, and little rain fell. Mr. Alec Smyth stated that Florence or Smutproof had given the best return for the 1924-25 harvest. Although the grain had filled out only two across in the spikelets, the yield was 36bush. per acre. It was affected with rust to a very slight degree, and it was also unaffected by smut. Mr. Smith pointed out the bad effects of barley grass when allowed to become strongly rooted on fallow ground. He recommended the destruction of the grass in the early stages to avoid take-all. Messrs. A. Shepherd and W. Brown supported that view. With Mr. L. Pillar Calcutta Cape oats sown on fallow in April, after 30 points of rain, produced a heavy crop. It was badly lodged except on red ground. The bulk of the crop was cut for hay; the remainder yielded about 12 bags per acre. On seed plots grown from selected heads in previous years, Zealand Blue, 5-12ths of an acre, yielded 4½ bags, sown at the rate of 40lbs. per acre and lewt. super; Field Marshal, 2 acres, 11½ bags; White Tuscan, ½ acre, 5½ bags. These varieties were sown early, and were not affected by rust. Field Marshal wheat lodged. Main Crop.—Turvey, 27bush. per acre; Ford, 24bush. per acre; Nugget, 20bush. per acre (affected by red rust); Dan, 30bush. per acre (a very promising wheat for the district); Sultan, a little under 24bush. per acre; Bearded Gluyas, 20bush. per

acre (grain badly pinched); Early Gluyas, 27bush. per acre. All wheats sown on fallow under good soil conditions, at the rate of 1bush. to 1½bush. per acre, lewt. super 45 per cent. The hay yield was approximately 2½ tons per acre. Mr. E. Watts reported that Ford wheat had given best results, 36bush. per acre, followed by Joffre, 33bush; Queen Fan, 25bush. Major and Turvey wheats were badly affected by rust. Mr. W. Brown stated that Leak's Rustproof had produced 30bush. per acre; Ford, 27bush. Both varieties produced good grain, weighing 67lbs. and 65lbs. per bush. He was convinced that frosty weather, followed by hot winds in the spring, had affected some of the wheats more than red rust. The wheats mentioned were grown on fallow which had carried a very dense growth of clover the previous year. The land was ploughed in September after 1,600 sheep had been pastured on the land (90 acres) for one month. On account of the dry matter ploughed in he was unable to use a cultivator. He had harrowed the ground five or six times, and in preference to working the soil in the summer months had spent a fortnight hoeing stinkwort which grew during the harvest period. After the first good winter rain he had cultivated the soil, and followed that operation with a combine, sowing 1bush. seed and lewt. super. Mr. O. J. Murphy tabled a sample of Currawa wheat. Although affected somewhat by red rust, many of the grains were badly pinched, and brown or black in color. This variety was also affected by smut, and produced a very light-weight hay.

CLARE (Average annual rainfall, 24in.).

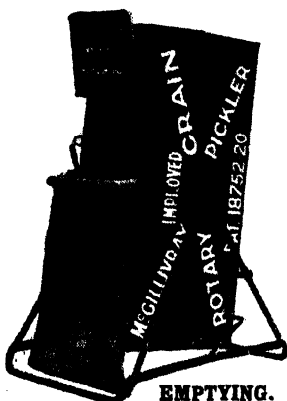
January 9th.—Present: 11 members and visitors.

RAISING FAT LAMBS.—The following paper was read by Mr. E. S. Nolan:—“After inspecting the Clare district, one is astonished to find what little use is made of much of the land. Considering the soil and the reliability of the rainfall, it should be possible to increase very considerably the carrying-capacity of the land. This can be done by top dressing natural pastures, and sowing permanent pastures, such as oats, barley, lucerne, and Sudan grass on the arable

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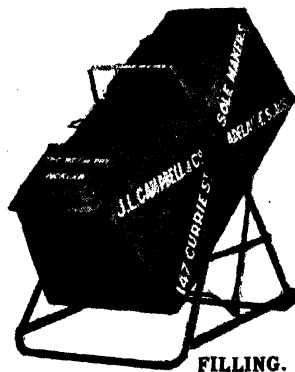
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land. As the district is no great distance from markets, raising fat lambs should prove a most remunerative form of production. In dealing with this question, the following points must be taken into consideration:—(1) Marketing; (2) the best breed of sheep; (3) feed and water; (4) fences, paddocks, and shelter.

Markets.—The South Australian market has to cater for both local and export trade, so that although early spring lambs usually command high prices, the market remains very steady. The average price for six seasons ending 1923 shows 25s. 4d. per head for lambs. The producer has the option of selling his products in the open market or forwarding direct to the Government Produce Department, who will take charge of animals as they are placed on trucks, prepare carcasses, and act as forwarding and selling agents in overseas markets. The department will make all necessary arrangements such as ordering trucks, pay railage, slaughtering, and freezing charges, and freight to England and London charges. The London market favors a lamb weighing 30lbs. to 37lbs., which mean 70lbs. to 76lbs. live weight. The department will advance to the producer, less the above charges, 75 per cent. of London value at time of shipment. This advance is free of interest.

Best Breed of Sheep.—The permanent lamb-breeding flock should be one that is acclimatised to local conditions, and accustomed to grazing in small paddocks. The animals should be deep bodied, and deep framed, and capable of cutting a long, good fleece; good mothers, able to produce lambs that will fatten quickly; and also show a high lambing percentage. Practically any breed of sheep should do well in this district, so that acclimatisation need not be considered. Even the Merino, if kept in small paddocks, requires a good fence, so good fences will be necessary. The Merino has a poor frame, is a bad mother, and produces a lamb that matures about a month later than the cross-bred. The Downs or shortwools are the earliest maturing, and are ideal mutton sheep, but as both wool and lambs from the permanent flock are desired, the Down breeds are the best as direct sires of fat lambs. Where length and quality of wool counts little, so far as the longwools (which in all cases are good mothers) are concerned, ewes are not obtainable in any quantities in Australia, so that to secure the desired mother, reliance must be placed in the longwool-Merino cross. Roseworthy Agricultural College has the following crosses in this line:—Lincoln-Merino, English Leicester-Merino, Border Leicester-Merino, and Romney Marsh-Merino. These are mated with the shortwools:—Dorset Horn, Shropshire, and South Down. Tests with these crossbreeds were started in 1920, so they have not been going long enough to arrive at any definite conclusions, but a very prominent point has been that best results in almost every test have been gained with the Border Leicester-Merino cross, and more especially with the Dorset Horn than with other sires. The difficulty in this district in raising fat lambs is that feed is not available until late in the season. As soon as lucerne and other summer fodders are finished, pastures are bare until August, when it is important that the ewes should have a supply of good feed. If early rains fall, the pastures top dressed early, and barley and oats sown, a good stand of early feed will be obtained, but even then really early lambs cannot be raised successfully. If early rains fail, it will be necessary to resort to hand feeding. A lambing ewe will do fairly well on 1lb. to 1½lb. of oats per day. This is about 1bush. for a month, and 3s. to 3s. 6d. per month should cover all costs of feeding. If natural feed for the ewe is not supplemented, the loss sustained in having to fatten a lamb that has been poorly nourished, and is consequently weak and sickly, cannot be estimated, and this does not include the loss sustained by the check in growth of wool. As the ewes will lamb late in the season, it is important that the flock should be pastured on high ground with plenty of shelter in the lambing paddocks. These paddocks should not be larger than 40 acres in area. With small paddocks, less feed is wasted, and sheep can be changed from paddock to paddock more often, thus giving the feed a better chance. Feed that is nipped back very short loses growth. There should be an abundance of water situated where the sheep can drink at will. Good fences will prove useful, and the first expense will very often prove the last. A good fence is an asset that cannot be valued at bare valuation of post and wire. At the Winter School at Roseworthy Agricultural College, the Principal (Mr. W. J. Colebatch, B.Sc., Agric., M.R.C.V.S.) recommended the following fence:—Seven wires—bottom 2in. from ground, then 4½in., 4½in. 4½in., 5in., 5in., 9in., between each wire. The breeding flock should be young ewes, and



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about 20 per cent. should be culled every year. This means keeping a number of Merino ewes and longwool sires of the breed used in the cross. This may seem an expense, but they are yielding wool, and by keeping the lamb-breeding flock as efficient as possible, greater returns will be realised:—(1) In the healthier and more vigorous lambs which will mature quickly, thus allowing more sheep per acre; (2) the ewes, if young and vigorous will not receive such a check at lambing, and will yield more wool. Rams should be joined with the lamb-breeding flock early in January, and left for about two months. Use 2 per cent. to 3 per cent. of rams, and, if possible, add an extra one during the last two or three weeks." The discussion that arose dealt mainly with suitable fodders, and especially subterranean clover and its management. Messrs. J. C. Dux & Son had a plot of three acres that had been fallowed and seeded with oats as a cover crop. 3lbs. of clover seed mixed with 1cwt. 45 per cent. super per acre was sown at a shallow depth through the drill and rolled in. The first year the crop did not make very much growth, but in the second and third years an excellent stand of good feed was obtained. Green feed from July to November was produced, and there was still a thick mat of clover on the ground which carried continuously three cows and two or three horses.

WILLIAMSTOWN (WOMEN'S).

February 4th.—Present: 17 members.

FRUIT DRYING.—Mrs. Brown read the following paper:—It is most important that fruit picked for drying should be properly ripe. Three pickings are often required before a variety is finished, and frequently the picking period extends over a fortnight. It is advisable to grade the fruit whilst it is being picked. This can be done by having two buckets instead of one. There should be no necessity for more than two grades. All stems should be discarded. Dipping.—The fruit is dipped with the object of cracking the skin, and care should be exercised that the fruit is not left too long in the caustic lye, otherwise there is a danger of the skin peeling and the fruit being spoiled. Some varieties of plums have very tender skins, and the times of immersion in the dip for the following varieties are suggested:—"Tragedy," from 5secs. to 8secs. is sufficient; "De Agen," "Splendor," and "Robe de Sargent," from 15secs. to 20secs.; "Angelina Burdett" requires up to 45secs. A good fire must be kept under the caustic lye, because the temperature has a tendency to fall very quickly when several buckets of fruit are immersed in the lye. A good dipping bucket can be made from a petrol tin with holes punched from the inside. Immediately the fruit is dipped in the lye, have a tub of clean water handy, and dip the fruit into it to remove the soda. The fruit will then be ready for the trays. A good cheap tray can be made with clean petrol cases, and 1in. x 1½in. timber for the sides. Sulphuring is only necessary for apricots, peaches, apples, and the light-colored varieties of prunes and plums, and is done with the object of giving the fruit a nice golden appearance. Apples do not require much sulphuring, 30min. to 40min. being sufficient. Apricots, "Coe's Golden Drop" plum, and other light varieties can be left in the sulphur fumes from 4 hours to 6 hours, or if only a small quantity of sulphur is used it can be left in the house all night. Do not use too much sulphur; it is better to use a small quantity and leave the fruit in an hour longer than to use too much. The following varieties are recommended:—Prunes—"De Agen," "Pacific," "Splendor," "Robe de Sargent," "Felleberg," "Sugar," and "Tragedy." Light varieties—"Coe's Golden Drop" and "Jefferson." Apricots—The best drying variety is the "Royal," and it is rapidly taking the place of varieties planted many years ago, such as "Moorpark," which mostly ripens on one side only. Other good varieties are "Riverside Late," "Tilton," "Mansfield Seedling," and "Blenheim." Peaches—"Elberta," "Muir," "Early Crawford," "Camden Golden." Nectarines—"Goldmine." When the fruit is dried, and after coming from the sweat box, a gloss is needed to give the fruit an attractive appearance. This can be done as follows:—Boil about 1lb. of the "Tragedy" variety for half an hour, add a little sugar and a few drops of glycerine, dip the fruit, spread it on trays to dry, and it will then be ready for market. Mrs. Brown tabled excellent samples of dried fruit.

LIGHT'S PASS, February 5th.—Mr. B. Boehm read a paper, "Farm Out-buildings and Repairs." Members also discussed the arrangement and preparation of exhibits which it was decided to enter at the Tanunda Show.

LYNDOCH, February 5th.—Fifteen members attended the February meeting, when an address "Manuring of Vines and Fruit Trees" was given by the Director of Agriculture (Professor Arthur J. Perkins).

NANTAWARRA, February 5th.—In the course of a discussion on the subject "Rabbit Destruction" the question was raised, "What is the most efficient strength to mix rabbit poison and is there any danger of fire if the mixture is made too strong?" Members agreed that double strength was too strong to obtain good results, but with the poison mixed to that strength it was thought there was no danger of fire. The best mixture could be made by using 9 pints of water with the poison instead of 12 as directed on the tins.

STOCKPORT, February 5th.—Eleven members and visitors attended the February meeting when a paper, "Power Farming," was read by the Hon. Secretary (Mr. R. Murray).

WILLIAMSTOWN, February 6th.—The Hon. Secretary (Mr. G. Brown) read a paper, "Some Aspects of Power Farming," and a keen discussion followed.

YORKE PENINSULA DISTRICT.

(TO BUTTE.)

BRENTWOOD.

November 13th.—Present: 22 members.

CARE AND DIPPING OF SHEEP.—Mr. A. Babbage, who read a paper dealing with this subject, said in the Brentwood district sheep were kept as a sideline by the majority of farmers, and at times there was no doubt that the animals did not

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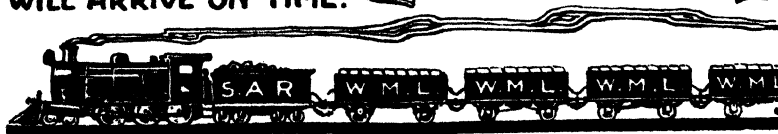
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receive proper attention, because the work of the farm would not allow the farmer to spend too much time with the sheep. On the other hand, the high price ruling for sheep and wool should be an incentive to farmers to give more attention to this line of livestock. An important fact in the care of sheep was not to overstock the holding. Sheep kept in good order and condition would produce more wool and would not be so liable to have a break in the wool as sheep that were neglected. During summer plenty of fresh water should be available for them. Wethers did not require a great deal of attention, except that if they became dirty they should be crutched. Ewes needed more attention, and when blowflies were troublesome the stock should be examined at least twice a week. Whilst there were several kinds of preventives that could be used to keep the flies away, he thought that one of the best remedies was to keep the ewes well crutched. Breeding ewes should be done three weeks or a month before lambing. For that work he preferred a sheep shearing machine, because it cut the wool more closely than blades, and the ewes would be clean at lambing time. The ewes should be examined every morning during the lambing season in case any needed assistance. For a flock of 200 ewes, the use of five rams was recommended by the speaker, in order that the lambs would be dropped quickly and losses by foxes would not be so great. When the ewes had finished lambing they should be put on good feed, because a stunted lamb never developed into a good sheep. At weaning time it was advisable to paddock the lambs on good grass and make provision for plenty of good water in the summer. The manager of the shearing board should take care that the shearers did not take off too much skin with the wool, because if the yards were not thoroughly clean there was a danger of the sheep contracting lockjaw. A month to six weeks after shearing the sheep should be dipped. Sheep that were to be dipped should not be put through when in a wet or heated condition. The best plan was to take them to the dipping place in the evening, so that dipping could be commenced in the morning. In the discussion that followed, Mr. D. R. Longbottom agreed in regard to using plenty of rams for mating purposes, so that the lambs would be dropped at the same time and be of uniform size. He questioned if dipping was of use in preventing fly troubles. In the opinion of Mr. F. J. Nation the use of the shearing machine was an ideal method of crutching, although he favored the blades for shearing. He thought it a mistake to hurry dipping operations, and he had found that a good dipping solution well applied acted beneficially in protecting the sheep from the fly. Mr. A. L. Vanstone agreed that keeping a few sheep in good condition was the plan to adopt; there always being a ready sale for fat sheep. More care, he thought, should be exercised at shearing time in the handling of sheep. Pens should be convenient to the shearing shed, large enough to prevent injury to the sheep. He agreed with a previous speaker as to the value of machine crutching and also in respect to blade shearing. Mr. C. H. Boundy favored weaning lambs at shearing time. He favored a long dip so that the sheep would be immersed for at least one minute. Mr. R. G. Anderson was of the opinion that there was too much overstocking in the district, resulting in inferior wool and lambs. Mr. Babbage's success with sheep was due, he believed, to good and plentiful water supplies and able attention, all these being possible on account of his not being overstocked. In reply, Mr. Babbage said he thought the machine shored too closely, and that, in his opinion, had a bad effect on the sheep because inclement weather was often experienced just after shearing. His experience had been that crutching ewes about a month before lambing and spraying with a good dip solution had proved fairly effective against blowflies, although during the past year he had not been so successful as formerly. He had found tar and kerosene very effective in combating the fly nuisance.

BRENTWOOD.

February 2nd.—Present: 20 members.

HARVEST REPORTS.—Mr. J. J. Honner read the following paper:—"Although the total rainfall for 1924, namely, 17.45 points, was sufficient for growing requirements, it was not favorably distributed. No less than 2in. of rain fell about the middle of February. This served no useful purpose to the farmer, in fact, it brought about a growth of weeds on the fallow, which had to be worked back so that seeding conditions would not suffer. As a rule, I am not in favor of working

fallow back in early autumn unless for the purpose of destroying undesirable weeds. May opened fairly well; it rained eight days of the month, 1.15 points being registered from the 19th to 23rd, and the month totalled 2.00. June followed with 244 points, which also fell over a period of eight days. July only registered 57 points, with dry, droughty conditions. The first fortnight of August was similar, no rain until the 12th, and crops were showing a decided need of rain. Only 57 points having fallen over a period of nearly eight weeks, crops had come to a standstill and presented a stunted appearance, which caused considerable anxiety to farmers. Towards the middle of August the weather became more seasonable and 192 points were registered for the month. September brought 207 points, October 335, and November 141. It will be observed that the October rainfall was considerably above the average for that month and in excess of requirements for that part of the season. Flag rust was very heavy on many varieties of wheat, but in few instances did serious damage, although it was apparent that it decreased the yield. It was generally expected towards the end of the season that plump grain and good yields would result owing to the splendid rains that fell during September and October, and in many cases crops averaged 30bush. to 36bush. per acre, whilst in quite a number of instances the yield was very disappointing, crops which looked good enough for 30bush. returning only 20bush. I attribute this to the excessive rain during September and October, which affected some soils more than others. The heads of wheat were not so plump as they should have been, because only in rare instances could more than two grains across be found. In past years I have noticed three and even four grains across, and this had the effect of reducing the yield. Crop competitions carried out by the Brentwood and Weaver's Branches of the Agricultural Bureau proved most successful, and it is pleasing to note that first, second, and third positions were obtained by farmers in this district. I desire to congratulate Messrs. Glazbrook Bros., W. G. Boundy, and F. L. Carmichael whose crops were all of a very high standard and were a credit to their owners as well as the district. The average yield for the district I estimate at about 18bush. to the acre. Regarding the best varieties to grow, I favor 'Ford,' 'Currawa,' 'Nugget,' 'Gluyas,' and 'Major,' giving preference in the order mentioned. The sample of wheat on the whole was above the average, due in no small measure to the absence of rain during the whole of harvesting, together with a better system of farming adopted by farmers. There is, however, still a large percentage of Cape barley in many crops, and some farmers do not make any effort to free their crops from this objectionable grain, but are quite content to carry on so long as the wheat will pass without dockage. Barley crops on the average for yield and quality were a pronounced success. The yield was good and would probably average 24bush., some crops yielding as high as 40bush. to the acre. The quality was very even and more free from foreign matter than for many years past. The most noticeable point about both the wheat and barley was the absence of smut or bunt. Oats are only a minor crop with the majority of farmers in this district, being grown principally for hay or to assist in the eradication of take-all. The average yield of oats was considerably reduced because of the prevalence of red rust. The values of wheat and barley can be taken as a record, for I have never known prices like the present to have been offered before. With wheat in the vicinity of 6s. 6d. per bushel, and forecasts of 7s., and barley nominally 6s. in the open market, the farmer can be looked upon as a very prosperous person. The grain returns at Minlacowie are estimated at 127,000 bags—67,000 bags of barley and 60,000 bags of wheat. These figures are very satisfactory when one considers that the record for the port is 130,000." In the discussion that followed, Mr. J. Boundy said there was less barley in the wheat than previous years, the district on the whole being freer from barley than most Yorke Peninsula districts. "Ford" wheat in particular was a very good sample. He thought seven bags of barley per acre about the average yield. On the whole, the barley sample was good, but not of outstanding merit such as that of last year. Rain during the late months was not so much to blame for the slightly inferior barley as the dull weather and lack of sunshine at that period. Mr. H. Le Poidevin said that since last August he had travelled over most of the wheatgrowing areas of the State, but although he had seen many good crops, those in Yorke Peninsula district were more uniformly good over a large area than other parts of the State. Mr. C. H. Boundy, in referring to the hay yield, considered the average to be

about 25cwt. to 30cwt. per acre. He had grown "Early Burt" oats this season, and they had proved a splendid hay oat, being ready to reap before the New Zealand Cape was ready for hay cutting. They yielded 13½ bags per acre, which was highly satisfactory, especially as they were considered more suitable for hay. Several members, having obtained bags of seed wheat through the Department of Agriculture, reported as follows:—Mr. J. Boundy, "Walker's Wonder" yielded six bags, "Sultan" nine bags, and "Emperor" eight bags to the acre. All were affected with flag rust, but were good samples, and did not go down or shake out. Mr. C. Boundy, "Felix," 24 bush. to the acre, no rust and a good sample. Mr. A. L. Vanstone, "Triumph," 18 bush., no rust and a good sample; "Currawa" sown alongside, badly affected with rust. Mr. E. E. M. Twartz, "Emperor," six bags, badly affected with rust, grain of a poor standard; "Triumph," nine bags, fine sample, free from rust, &c., beat "Gluyas" and "Currawa" alongside by three bags. Mr. J. Boundy, "Onas," poor sample and yield, worst of all his wheat for rust. *Oats or Barley as Rotation Crops.*—Mr. Twartz said he had many times grown wheat after oat stubble alongside wheat after barley stubble, and the result had every time been in favor of wheat grown after barley stubble. Mr. Walters differed from that view, and cited a case in which the area last sown with oats proved superior after the land had been uncropped for 12 years. Mr. Honner said he knew little of the comparative values of oats and barley as rotation crops, but oats had proved effective in new areas in the prevention of "take-all."

KILKERRAN.

February 3rd.—Present: eight members.

HARVEST REPORTS.—Members reported that the average yield for the district was approximately six to seven bags per acre on sandy soils, and seven to eight bags per acre on heavier types of land. Two varieties of English barley, received through the Bureau last year, were sown by one of the members, but these proved unsuitable, because they were both green when "Prior's" was beginning to ripen. Until quite recently farmers had held the opinion that on the lighter soils heavy dressings of super were liable to burn the crop; but the year 1924-25, having been a dry season, it was found that where more super was sown increased yields were obtained. It was also generally agreed that if too much super was drilled in with barley, the plants made a rank growth, and a poor sample of grain was produced. Mr. S. Keightley reported that on patches of land that had been covered with drift he had, during the past season, obtained exceptionally good results.

KADINA, February 6th.—Mr. W. T. Correll gave a report of the recent Paskeville Field Trial of Harvesting Machinery, and an interesting discussion ensued.

WESTERN DISTRICT.

CHARRA.

January 7th.—Present: 11 members.

HARVESTING THE CROP.—In the course of a paper dealing with this subject, Mr. A. Haseldine favored the 8ft. stripper. A larger size had a tendency to drag to the off. It was the cheapest and lightest machine, and used less oil than others. It was able to travel quickly without a considerable amount of wear and tear. Getting the wheat into heaps quickly minimised loss. If a farmer had 400 to 500 acres to reap, two strippers would be sufficient. One advantage the stripper had over any other methods of harvesting was, should the crop be light or heavy, the wear and tear was about the same. Additionally, in their district where the yield was, as a rule, light, cocky chaff was valuable. Economy, quickness, and general effectiveness had to be considered, and he was convinced that the large strippers and up-to-date cleaner would handle the crop most effectively. Members generally agreed with Mr. Haseldine's remarks, and believed that a better sample and less risk of weevil resulted by using a stripper. The Hon. Secretary (Mr. E. Denton) did not think two machines were sufficient to deal with 500 acres. Every day after the wheat was ripe it was a gamble with the elements, and it very often paid handsomely to have an extra machine.

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McLACHLAN, February 7th.—The subject for the evening was "Members' Views and Discussion on 1924-5 Harvest." Mr. W. E. Hawke said Caliph was the best yielding variety of wheat on his farm, but being on good land helped it considerably. Chaman also gave a very good yield. Mr. Kloppe said that on the whole they had very little "take-all," but owing to the fact that no rains fell during July, portions of the crop malted. Mr. W. E. Hawke drew attention to the high position held by Federation in the Midland District Wheat Crop Competitions, also the comparatively heavy wheat seeding and dressings of super, and suggested that members might take a lesson therefrom. Mr. Kloppe dissented, pointing out that until the land was free from shoots and properly fallowed, the shoots took toll of the moisture and super to the detriment of the crop.

EASTERN DISTRICT.

BRINKLEY.

February 7th.—Present: seven members.

HARVEST REPORTS.—Mr. E. W. Pearson reported that oats grown on fallow yielded 1½ tons of hay per acre. Grain returns were:—Lachlan, 12bush. per acre; Early Burt, 12bush. per acre; and Scotch Grey, 8bush. per acre. Currawa wheat sown at the rate of 1bush. of seed and 90lbs. 45 per cent. super, yielded 24bush. per acre. Three 10-acre plots of Major sown on fallow yielded as under:—Plot 1, dressed with 112lbs. super, 29bush.; plot 2, 168lbs. super, 31bush. 21lbs.; plot 3, 196lbs. super, 31bush. 3lbs. All wheat was sown on fallow. Fifty acres of English barley grown on ground ploughed and drilled, yielded five bags per acre, Cape barley, 8 bags per acre. Messrs. Martin Bros. reported oats cut for hay yielded 1 ton per acre; Federation on fallow yielded 15bush.; barley yielded 12bush. per acre. All crops dressed with 90lbs. super per acre. Mr. A. W. Richards reported oats cut for hay, 1 ton per acre; oats stripped yielded 18bush. per acre. Major 8½bush., Gluyas 16½bush., Caliph 12bush., Felix 10bush., Sultan 9bush. Crops dressed with 90lbs. super per acre. Mr. E. G. Humphrey reported that oats for grain yielded 15bush. per acre; oats for hay yielded 1½ tons per acre, Major on fallow 25bush. per acre, Major on scrub land 12bush., Gluyas 7bush. English barley yielded 25bush. per acre. Crops were dressed with 90lbs. super per acre.

WAIKERIE (Average annual rainfall, 8.89in.).

November 8th.—Present: 25 members.

LAYING OUT A DRYING GREEN FOR PIP AND STONE FRUITS.—Mr. F. H. Baisey, of the Renmark Branch, in the course of an address dealing with this subject, said he had had experience of handling fruit upon an unsuitably laid out drying green and assisting to plan and prepare another ground wherein the mistakes of the former were corrected as far as possible. The first consideration in laying out a drying green should be a situation as free from dust as possible. Dusty, gritty, dried fruit was horrid stuff when cooked, and no grower would have it served upon his own table. It was not a fair thing to inflict it upon an unsuspecting consumer. He was sure that the consumption of dried fruit had suffered from lack of proper care by growers in that respect. He advised placing the shed and drying green to the westward of the track along which the fruit had to be carted from the orchard. Thus the only wind that would carry dust across it would be easterly, which was the least prevailing wind, and also the wind which blew with a minimum of force. The second point to consider was the position of the sulphur house in relation to the cutting shed. Burning a considerable quantity of sulphur as was essential in treating pears, the fumes were very disagreeable to the cutters and other hands working in the shed. It was not possible to place the sulphur house to the eastward, as that was occupied by the track, so he advised placing it to the north of the shed. Experience had taught the advantage of a transfer truck system as against a lot of turntables, the latter were a great deal more expensive to install and

were troublesome in upkeep, and there was a much greater risk of accidents with trucks piled high with fruit-filled trays than there was with the transfer truck. When the latter was once properly installed it was there for all time, and required very little attention. It consisted of a low truck with a pair of rails across its length, upon which a truck loaded with fruit could be placed. It ran on rails in a subway dug sufficiently deep to bring the traverse rails on its top level with the line upon which the fruit-laden truck was destined to go. The sides or walls of the subway were bricked to keep them perpendicular. The shed on his property was built of sand bricks on the western side and southern end. The eastern side and northern end were open. There was a doorway in the western side, through which ran a rail track into the shed between the cutting tables. That led at the other end to the transfer truck in its subway. First, empty trays were brought into the shed on that line, afterwards the fruit-laden ones went out by it to the sulphur house. Eight of the latter were used, and they were ranged side by side along the other end of the subway; each had a rail track leading into it from the edge of the subway, so that the truck loaded with full trays was pushed along its line in the shed on to the transfer truck waiting in the subway, the latter was pushed along with the full truck on top of it until it was opposite the sulphur house into which it was destined to go, and it was pushed off the transfer truck on to the rail track leading into the house. When sulphuring was completed, the truck was pulled out of the house along the rails on to the waiting transfer truck, which was then moved into place, opposite one of the two lines leading on to the drying green. The ground was planted to lucerne, and whilst that plan had certain very decided disadvantages it also had its virtues. As long as fair weather prevailed, and there was neither rain nor dew, it was all that could be desired, but when moisture got into the soil the lucerne began to grow under and between the trays it was apt to promote the development of mould. If one was considering simply drying conditions, couch grass would be the ideal covering, but as

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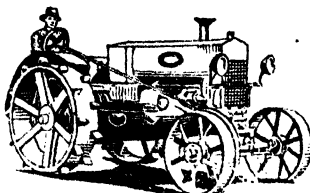
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it was desirable to get something out of the land as well, he did not think lucerne could be improved upon. Another green near his property was laid down with Kentucky Blue and Chewings Fescue grasses, and provided that was kept well fed off or cut, it answered very well. One thing was certain, the ground should be well covered with something that would stand the considerable amount of traffic that was inevitable. Again referring to the position of the shed, it was advisable if at all possible, and subject always to the prime consideration of avoiding dust, to place the shed as near as possible to the centre of the orchard so as to reduce carting. Two other points that should be mentioned about the shed were a rail track running along inside the western wall, to enable the sweat boxes of pears to be trucked to the cutting tables, and a small opening halfway up the middle of the southern end wall to allow a current of air to blow through the shed, which not only made working conditions more pleasant, but also helped to keep the pears in good order. Ridgecapping was not placed on the roof, but curved iron was nailed on one side of the ridge, leaving the other side open to give extra ventilation. The sulphur houses were built of sand bricks and burnt bricks with partitions of burnt bricks. Doors were of matchboard and rubberoid roofing was nailed to a solid foundation of boards. Mr. Morant, a Renmark grower, had his sulphur houses roofed with tiles, which was certainly very nice and practically everlasting, but it was rather expensive. Experience on an old green on his property showed that in cold weather, sulphuring of pears was a troublesome and costly business, because so much time was wasted and so much sulphur used, one being sometimes compelled to burn two and three lots before the fruit reached the right stage. Very often it appeared that sulphur was being used for heating purposes, and that no effect was made on the pears by the fumes until a certain temperature had been reached. Sulphur was too costly to be used as a fuel, and it was resolved that in new houses built as described provision should be made for a means of raising the temperature to the requisite heat by burning firewood, and not sulphur. A combination of heat and damp (provided by watering the floor of the house) was also necessary to obtain a marketable sample from those pears which the cutters split whilst still too firm. At the end of most seasons a portion of partly dried pears were on hand which had to be finished off by putting firepots in the houses and improvising them as evaporators. That had never been satisfactory; the pears very readily showed the effect of smoke, and that was hard to eliminate in using firepots for heating; they were quite bad enough when grape fruits had to be finished off by their aid. It was resolved to try and devise sulphur houses that were readily heated to ordinary summer day heat, say, 100°, which would make sulphuring easy, and could, when needed, be brought to a temperature which would finish off half dried pears and not spoil the sample. Half of an old boiler was procured and divided lengthways to act as the top of the furnace. A hole 3ft. deep and 3ft. wide was excavated, and the sides walled up with bricks. The bottom formed the ash box, the furnace was fitted with second-hand firebars, and at the top of the walling on the ground level 15 boiler tubes in three groups of five ran out on each side across the floors of the three sulphur houses ending in a chimney shaped at the base like a triangle, so as to take in the whole of the area across which the pipes spread, and at the apex of the triangle it ran into an ordinary-sized flue. Those pipes carried all the smoke and heat to the chimney, and had proved quite capable of furnishing all the necessary heat. The pipes were grouped in lots of five instead of being spread across the whole floor uniformly, in order that loose bricks might be placed across the outer ends of the pipes and just plastered in with mud so as to be easily removed and allow the pipes to be cleaned out. In effect, therefore, the chimneys were built on columns. The rail track leading into the houses was laid on top of those pipes. At the back of each house a small bricked pit was made to take the basin which contained the sulphur. The firebox was long enough to take ordinary engine wood, i.e., 5ft. To supply air, a large iron flue pipe was installed above the firebox in the curve of the half boiler which formed the furnace top, with one end projecting through the brickwork above the front of the firebox into the open air. Three holes were cut out on each side of the flue pipe and boiler tubes fitted, which were bored with holes on their top sides. These were placed along the sulphur house floor beside the 15 other pipes that carried the smoke to the chimney. The perforated pipes carried a current of hot air to the bottom of the houses. In the roofs outlets in the

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shape of coffee tins with the bottoms cut out were provided; when not in use as evaporators, but as sulphur houses, the lids of the tins were put on. In that respect it had not proved a success, because no provision was made for an air current, and the pears baked without drying. But heating, as an adjunct to sulphuring, was quite a success, and some such arrangement was an absolute necessity in successful pear drying. The house had a firebox on the easterly end of the south side, above it, and forming part of the floor of the house was an iron plate, the smoke and heat were conveyed from the back of the firebox through the middle length of the house by a brick flue covered by an iron plate, and out by a chimney situated at the westerly end of the northerly side. That could be improved by utilising boiler pipes in a similar manner, and providing for an ingress and outlet of air. The foregoing was intended to deal with a ground adapted for handling a large quantity of fruit, but in conclusion he described a ground very suitable for handling from, say, four to six tons of dried fruit. In general layout it conformed to the principles laid down for the former as the prime essentials. The shed and green should lie to the westward of the track on which the fruit was carted, thus being as free as possible from dust. The single sulphur houses would be situated to the north of the shed, and the fumes would thereby be kept away as much as possible. A single rail track should run on a curve out of the shed through the sulphur house and straight out through the middle of the green. The house was arranged with the same object in view—utility as a finishing off evaporator.

WILKAWATT WOMEN'S.

February 10th.

Fourteen members and five visitors attended the February meeting, when Mrs. E. Altus read a paper, "Useful Hints on Dressmaking." Members also discussed the subject, "Fancy Work and Sewing."

MONARTO SOUTH, February 7th.—The first meeting of the Branch for the new year was devoted to a discussion of points of interest connected with the harvest for the 1924-25 season. Thirteen samples of wheat were submitted, the average showing 63lbs. to the bushel.

NEW RESIDENCE, February 4th.—The Hon. Secretary (Mr. O. E. Klauf) read a paper, "Power Farming," and a keen discussion followed.

WAIKERIE, December 20th.—Mr. E. Miller delivered an address, "Drying Stone Fruits," and replied to numerous questions. A paper, "Power Farming," was read by the Hon. Secretary (Mr. F. B. Harden), and an interesting discussion followed.

Mr. C. G. Savage (Deputy Horticultural Instructor and Manager of the Berri Orchard) attended the January meeting, and delivered an address, "Orchard Tillage." Mr. Savage also spoke on the dipping of sultanias in the "cold dip."

SOUTH AND HILLS DISTRICT.

CHERRY GARDENS (Average annual rainfall, 35.03in.).

February 3rd.—Present: nine members.

HAY MAKING.—In the course of a paper under the heading, "Hay Growing in the Hills—Does It Pay?" Mr. J. Lewis doubted very much if hay could be profitably grown in the Adelaide hills. In most cases, the area available for the crop would be very small, and in many instances practically worn out, so that it would be necessary to fallow the land or grow a crop of field peas on it, and then heavily dress it with manure. He recommended growing a crop of field peas, but if the gardener decided to grow hay, the writer expressed a preference for a mixed crop of wheat and oats, because when chaffed it made excellent feed, especially for working horses. Last year he cropped a 7-acre paddock. After taking seed, manure, labor, &c., into account, it cost £27 by the time the hay was put into the stack. The cost was arrived at in the following manner:

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THE AGRICULTURAL BUREAU.—Particulars of this Organization, of which every farmer should be a member, can be had on application to the Department.

—Ploughing, seven days at £1 per day, £7; seed wheat, 80bush. at 7s. 3d. per bushel, £3 12s. 6d.; seed oats, 3bush. at 4s. 6d. per bushel, 13s. 6d.; bonedust, 1½cwt. to the acre, at 8s. per cwt., £4 5s.; drilling, at 5s. per acre, £1 15s.; harrowing, one day £1; rolling, one day, £1; binding, at 12s. per acre, £4 4s.; stooking, one day, 10s.; carting, two men and two horses, two days at 30s. per day, £3; total cost, £27. The paddock returned about eight tons of hay, to which should be added 10s. per ton for cutting into chaff, making a total of £31, or practically £4 per ton for the hay.

CURRENCY CREEK.

January 9th.—Present: seven members and three visitors.

THE HOME GARDEN.—In the course of a paper under this heading, Mr. W. Saltmarsh said the home garden should be situated on a gentle slope, and for the best results the soil should be a dark, sandy loam overlying clay or rubble sub-soil. He suggested that the vegetable garden should be made on a plot of virgin soil, the land being well worked, and care being taken not to bring the sub-soil to the surface. If land had been worked late in the season during the first year, a crop of potatoes or onions could be grown with the aid of the rainfall. Nearly every farming district at the present time had an adequate supply of water, either from dams, bores, or a State water service, and although the latter was expensive, it would be found better and in the end cheaper to grow vegetables on the farm than to buy them from hawkers. Turnips sown at the latter end of February would produce good crops early in May, and roots from the same bed could be used until well into the spring. Green crops could be produced any month in the year, and were especially valuable from a health point of view. He recommended the cultivation of a patch of asparagus, which once established would last for a lifetime. It contained many valuable medicinal properties. Practically any class of soil would produce marrows which, if grown in large quantities, could be stored for winter use. In reply to a question on transplanting lettuce, the writer advised members never to transplant for summer use. The seed should be sown in drills 18in. apart, and when making secondary leaves the plants should be thinned out to 10in. or 12in. apart. Water should never be applied to the foliage, but the plants could be given a heavy watering by gravitation, either early in the morning or late at night.

ROCKWOOD.

January 5th.—Present: 11 members.

IMPROVING THE FERTILITY OF THE SOIL.—Mr. H. Green read the following paper:—"The first essential point in successful and economical soil improvement is to know the important constituents of the soil. One of the main constituents necessary to keep the soil in good heart is humus, or organic matter. It is not uncommon to hear of farms and gardens that have lost their original fertility, and this is largely due to the fact that all organic matter has been used and nothing done to replace it. The soil can be returned to a state of profitable production, but it is bad management to allow such a state of affairs to come about. A good farm or garden should become richer each year it is worked. One of the best methods of returning humus to the soil is through the medium of farmyard manure, i.e., the droppings of animals, and straw, etc., used for bedding. Wherever possible, farmyard manure should be looked upon as the foundation of manuring the vegetable garden. Too often the manure is thrown in a heap outside the stable, and the water from the roof of the shed runs into it, and washes away all the soluble and most valuable constituents. The most economical method of dealing with this manure is to get it on the land and plough or dig it in as soon as possible. Another good plan is to have the manure heap under cover, and each time the stable is cleaned out a layer of earth can be added to act as an absorbent for the liquid. Gypsum added to

the heap will prevent the loss of some of the ammonia, but the addition of lime to the manure releases the ammonia. With the advent of motor cars and tractors, there is a possibility of less stable manure being available, so that gardeners and farmers may have to resort to other means to return humus to the soil. One method is ploughing under green crops. Where a large amount of green stuff is turned in it has a tendency to sour the land, but this can be overcome by an application of lime. If a leguminous crop is sown it will improve the land. Leguminous plants have on their roots small nodules in which nitrogen is stored by bacteria living in them. I have found that an application of lime greatly improves the leguminous crop. Most crops require a fair amount of nitrogen, and when it is considered that it is the most expensive of the plant foods when purchased in a commercial fertiliser, the power of these plants to obtain it from the air is worthy of more serious consideration. This does not mean that with the use of stable and green manure commercial manures can be dispensed with. The following points are worthy of consideration by all farmers and gardeners:—(a) Turning under all straw and stubble, because it helps to make the land more friable; (b) a more generous use of lime on all soils that fail to produce satisfactory crops of clover or other legumes; (c) conservation and economical use of farmyard manure, reinforcing the manure with phosphates; (d) general use of high-grade fertilisers, for such crops as potatoes and other garden crops, especially where manure is limited; (e) top dressing pastures with lime and fertilisers where the need is apparent, and growing more clover and other legumes to reduce the expense of nitrogenous fertilisers. If these are practised the farmer will enrich the soil and himself at one and the same time."

ROCKWOOD.

February 9th.—Present: 14 members.

MARKETING PRODUCE.—A paper was contributed by Mr. G. Mudge. Being producers in a young country, with a place to win in the world's market, he said they should endeavor to market their produce in the most attractive manner, and aim at quality rather than quantity. It was essential that attempts should be made to open up oversea markets for prospective surplus production. Wool was perhaps the most important Australian product. They should endeavor to get the best sheep procurable, and improve on them each year. At shearing time great care should be taken in classing the wool to see that each bale contained a uniform class of wool, with all foreign matter removed. They should see that the sheep were well fed, because the quality of the wool depended very largely on how the sheep had been kept during the year. The next product of importance was wheat. Care should be taken to grow, where possible, the varieties that made the best flour, even though the yield might be a trifle less. Red wheats should not be grown. Care should be taken in cleaning wheat to remove all weeds and chaff. With the land still to be opened up in Australia, and the possibilities of modern methods of fertilising pastures, much could be done in the meat industry. If they were to compete successfully with other countries, then they should market stock not as forward to fat, but in prime condition. Drought conditions that sometimes prevailed made it difficult at times to fatten stock. Where possible, a stack of hay or fodder should be stored up as a standby. In breeding fat lambs for market, it was a common error to try to produce too many, with the result that they had to be marketed before they were properly matured. If, on the other hand, smaller flocks were kept they would mature more quickly, and could be sold in very prime condition. That would not only pay the producers better, but would be a better advertisement for the Australian product. The dairyman would find that 20 good cows, well fed, would pay better than 30 cows only half fed. They should make a name for Australian products that would stand good in the world's markets, not for one year only, but for years to come, and in order to do that nothing less than the very best would suffice. In the discussion that followed, Mr. A. Wilkins said Australia's chief trouble was not keeping her supplies up to the demand. Where oversea markets were sought for surplus produce, a better system was needed to maintain the supplies. Mr. H. Henley considered that farmers were not paid according to the value of their products. For instance, the farmer who marketed

an inferior sample of wheat received as much as the man who took the trouble to make a first-class sample. Mr. L. Tucker said that in raising fat stock there was always a percentage of animals that did not thrive, and he advocated reserving feed to force the weaker animals on, thereby making the standard of quality more uniform. He regretted that so much second-grade butter was exported. He thought the first grade only should be exported.

SHOAL BAY.

January 6th.—Present: 11 members and three visitors.

KILLING SCRUB ON KANGAROO ISLAND.—Mr. R. L. Turner, in the course of a paper dealing with this subject, said if the landowner had to deal with low scrub, such as narrow leaf and mallee bush intermixed with wild shrubs, etc., the best plan was to roll with a heavy roller fitted with a sharp angle iron, so that bushes would be cut, and the growth of springbacks prevented. Rolling should be commenced as soon as possible after seeding was completed, and the area rolled should not be left until the next burning season. If that was done, the heat of the summer would dry the bush, &c., the winter rains would rot a large amount of it, and the following summer it would dry again, and a fire on a hot day would make a clean sweep of the fallen scrub. Any fresh shoots would also be destroyed. If large and valueless scrub had to be dealt with, a calm day should be chosen, and a slow fire allowed to pass steadily through the timber. The idea of the plan was to prevent the fire burning the foliage, which would die and shake off in the wind, and smother the shoots when they made a fresh growth. Then, with grass and other material that would quickly grow, it was more than probable that another fire could be started which would almost, if not entirely, kill the scrub.

STIRLING.

February 7th.—Present: 10 members.

THE SMALL LANDHOLDER'S COW.—In the course of a paper dealing with this subject, Mr. J. Davies said of the many breeds of cattle there were one or two breeds that were especially suitable for the small landholder, and he thought the Jersey the best cow for the man with a small area of land. The cows of that breed were, as a rule, very quiet, docile, small, and easily managed; the milk was generally very rich, and they usually gave from 2½galls. to 3galls. per day. There was, however, one fault with Jerseys, namely, that when fattened and sent to the butcher, they did not realise a very good price. To obviate that he recommended a cross with a pure-bred Shorthorn. The Shorthorn was a larger animal, and the cows were good milkers. They were a beef breed, but if crossed with the Jersey, the milking qualities of the latter would not be injured, and the carcass would be improved from a butcher's point of view. Another breed which he thought an ideal cow for the small landholder, was the Dexter-Kerry. They were small cows, very hardy, docile, and when fattened, made a good butcher's cow. The Alderney and Guernsey breeds were excellent cows for the man with a small farm, being good milkers, and rich creamers. Continuing, the speaker said if the gardener owned a good cow, he should secure the services of a reliable and proved sire, and so maintain and improve the standard of his cows. Whichever breed was decided upon, provision should be made for shelter. Sixty per cent. of the food eaten by the cow was needed to maintain the cow in good health and condition, and 40 per cent. for production, so that by rugging the cows in cold or wet weather, much would be done to keep up the condition of the animal. A shed should be provided for shelter at night, and when the wind was cold. In choosing a cow, the following points were worthy of consideration:—"See that the teats are well placed at equal distances apart, large milk veins along the belly, and well-set udder running under the belly, and thin thighs. Those several points would, as a rule, denote a good milker."

TWEEDVALE.

February 5th.—Present: 48 members and five visitors.

BEEKEEPING.—Mr. H. Schell read the following paper:—“Beekeeping can be combined advantageously with fruit growing, farming, and poultry raising. Many of the unpleasant features associated with the keeping of bees have been eliminated by modern methods of handling, and also by perfecting the bees themselves. The modern hive in its simplest form consists of a floor or bottom board, a hive body to hold the brood frames, supers to hold extracting frames, or section holders for comb honey, and a cover to shield the hive from the weather. The old-style box hive when filled frequently caused swarming, because the bees did not have enough room in which to store honey. Modern methods of management seek to discourage swarming, and to encourage the bees by expansion of the hive to keep on storing honey. A strong colony of bees will, as a rule, gather more honey if it can be prevented from swarming. Amateur beekeepers are inclined to think that a petrol case is good enough for a hive, and they are disappointed at the results. The fact is too often overlooked that the timber in the sides of a petrol or similar case is only $\frac{1}{8}$ in. or $\frac{1}{4}$ in. thick, and does not give the bees sufficient protection from severe hot and cold weather. If the beekeeper is going in for honey production, it is not advisable to increase to a great extent. Five strong hives will gather just as much as 15 weak colonies. The idea is sometimes held that it is advisable to split a full stock into three or more parts; that is incorrect, unless increase is desired. It is quite possible that a frame or so of bees will develop into a strong colony, but it will take a considerable time, and will be useless that season, unless the honey flow in the locality is very late. Where artificial swarming is desired, it is an advantage to have nuclei with young fertile queens to introduce into the new hive. Most hybrid bees are inclined to swarming, and at times are a great nuisance, because they will swarm with the old queen, and if very strong, will swarm two or three times. As a rule, the first swarm is the best, and the others are very small and useless, but in some cases they come in very handy for strengthening a small, queenless hive, providing the hive has been queenless for four or five days. If the hive has been queenless longer and queen cells are sealed, the bees in the old hive will more than likely kill the queen with the swarm, and, consequently, the bees with the swarm will return to their old hive again and perhaps kill the queen there. A full stock that has swarmed three or four times becomes greatly reduced in strength, and will take considerable time to build up into a strong hive. It is, therefore, advisable to examine the old hive from which the swarm emerged, and destroy all queen cells and introduce a fertile queen, but, in some cases, when the bees intend to swarm, no matter what may be done, they will have their own way. It is, therefore, beneficial to introduce artificial swarming. There are many ways of making artificial swarms, but all are not a success, and there are many who condemn artificial swarming, but if done in a proper way it will not be condemned. The first thing to be done is to examine the old hive and find the queen; secondly, place six of the brood combs into the new hive, and shake out all the bees that may be on the side of the hive, and on the remaining comb, which does not contain the queen. Place the two remaining combs back into the old hive. It will not be necessary at once to fill the old hive with frames, about four frames with full foundation will be sufficient for the time being; next, cage a young fertile queen in the new hive, and place wherever wanted. As most of the old bees will return home again, both the hives in about a week's time will be of the same strength, and in five to six weeks' time both will be strong. The apiarist is vitally interested, not only in keeping his apiary free from disease, but also in ridding the whole district of it, also, as far as possible, the State, for at any time his apiary may become infected by means over which he has no control. There are different ways in which brood diseases are spread from hive to hive, from apiary to apiary, and from infected to clean districts. The purchase of bees on combs, or of second-hand hives and frames and their transfer to other districts, the moving of apiaries to catch honey flows or to prevent starvation, and the introduction of queens and their worker escorts, are all means of continually re-stocking clean districts with brood diseases. The most potential source of danger, however, is honey, coupled with the methods of old-time beekeepers, and the absence of commonsense regulations under the Bee Diseases

Act. There is no need to enlarge on the danger of purchasing bees on combs, without thorough inspection before removal to a clean district. The migratory beekeeper, who, as a rule, is of the more intelligent type of the craft, may be the means of transferring disease. Not that he would knowingly move diseased colonies, but because his bees may absorb the infection during their temporary sojourn in one locality, and carry it on to the next. The risk of introducing disease by means of queens is slight. Without a doubt compared with honey, all other means of spreading diseases are insignificant. There is first of all the box hive keeper (still present everywhere), who strains the honey in the open air, and throws old brood combs and refuse out for his own and other bees to clean up. Quite likely there is foul-brood. The disease is scattered broadcast by robbing bees to other hives, to bee trees, and either direct or eventually to frame hives where the extractor assists in spreading it in the apiary. The honey from the mashed combs of the box hives or from the bee trees, is tinned and sent to some salesroom. It may leak during transit, and give the bees somewhere on the way a chance. In the city the honey is purchased by a firm of honey packers, blended with other honey, and put into retail packages, each containing its quota of disease germs, and is scattered all over the country. When empty, the jars or tins are thrown away, the remnant of honey cleaned out by bees, causing mysterious outbreaks of diseases in previously clean localities. The original tins in which the honey was marketed are also often returned to the country without being first washed. A serious outbreak of foul-brood, two years ago, in a previously clean district was traced to this source of infection. Since then, unwashed emptied honey tins are not accepted for transit on the Victorian Railways, and if the straining and exposing of honey in the open were made an offence, on the same principle as in the case of meat and other articles of food, much would be done to minimise the spread of bee diseases."

BALHANNAH, February 6th.—Twenty-three members attended the February meeting, when an interesting paper, "Beekeeping," was read by Mr. F. Norsworthy. The paper resulted in an instructive discussion.

PENNESHAW, January 12th.—Mr. F. Tretheway read an instructive paper, "The Blowfly Pest." The writer of the paper exhibited a trap which he stated had been used very effectively in catching flies.

SOUTH-EAST DISTRICT.

KALANGADOO WOMEN'S (Average annual rainfall, 33in. to 34in.).

January 10th.—Present: eight members.

QUALIFICATIONS OF THE FARMER'S WIFE.—Mrs. Bennett read the following paper:—"The farmer's wife should be tenacious of purpose and have a will that brooks not of failure. She should have a fair education and be able to add up a column of figures so that she can see at a glance how far the housekeeping expenditure is involved. She should be able to cook in all the necessary branches that will be required on a farm, including baking bread. She should be able to milk, sew, darn, or mend clothes. She should be prepared to go out with her husband in the early days of married life and help build up the future home and take her part of the hardships of the early days on the farm. Hardships come to all early settlers on the land, and when success is achieved she will be pleased to think that in gaining success she was a help and not a hindrance. She should also take a lively interest in the crops and livestock on the farm and consider herself part owner of them, and realise that a loss on any of them is a loss to herself as well as to the husband. She should be methodical in her work and have regular hours for meals and doing other work. I have never found it necessary in my 40 years' experience to do any work after teatime. I have found that breakfast at 7 o'clock, dinner at 12, and tea at 6 has worked splendidly, notwithstanding that I have had to rear a family of seven and have had

to get four children away to school and to get three away to work, each one having his dinner prepared separately. Without method, I would have been unable to do the work without help. If the farmer's wife can sing a song or two and play an instrument, the home life will be considerably improved, for although some of the work on the farm is rough, life can always be made pleasant around the fireside when the day's work is done. The woman who comes without experience to farm life may not have all the qualifications, but every farmer's wife can possess them and more besides if she has the will to do so, for being a farmer's wife does not debar one from aspiring to as many accomplishments as those possessed by the wife of any other man."

Miss O. Tucker read a paper, "First Aid," which aroused an instructive discussion.

TANTANOOLA.

February 6th.—Present: eight members.

TOPDRESSING PASTURES.—The Hon. Secretary (Mr. R. Campbell) read the following paper:—"The prominence now being given to topdressing pasture lands is not an ephemeral fad, for many practical results testify to its profitability. Some 40 or more years ago, when the agricultural industry on the drained lands was in a most parlous condition, many experienced farmers considered that the time was not far distant when agriculture would consist of only an occasional usage of the drained lands, whilst the smaller holdings would be absorbed by the larger ones, and the land used mainly for grazing purposes. There were practical men who contended that one crop in three years was all that could be expected of even the best lands. This was before the advent of superphosphate. The Government of the day made an endeavor to help the farmer out of his difficulties, and offered to have analyses of the soil made free of cost. Many samples were sent down, and when the reports stated that all were deficient in phosphates many did not know what it meant, and others cavilled at the statement that many of them contained a large proportion of sand, and some questioned the capability of the analyst. But there were a few men like the Messrs. Hart, Holzgrefe, and the late Jas. Bird who took the matter up and put it to the test. Many have, perhaps, forgotten the remarkable results from the application of about 1cwt. of Naracoorte guano to Mr. Hart's 'Wyrie' land. Later, superphosphate was used, and though many were for some time hostile to its use, its application soon became general, and no one now thinks of putting in a crop without a liberal dressing, and the very land of which it was said it was only possible to produce one crop of grain in three years has actually produced as many as eight crops of barley in nine years. Yet, whilst these demonstrations have been going on, grass lands have been neglected, but times are changing, and in a few years the use of phosphate on grass lands will be as general as its use on cultivated areas. In 1897 the total phosphatic manures used in this State was about 3,000 tons, and that mostly imported, but now its use runs into hundreds of thousands of tons per annum. It is only recently, so to speak, that attention has been persistently directed to the use of fertiliser on grass lands, but as on the cultivated lands the few in the beginning stuck to it, and their practice is now giving the usage a fillip. For the best part of 100 years stock have been carrying the phosphates from the soil, and nothing was done to replace them. But practical men now contend that it is better to improve the small holdings than to increase the acreage at high prices. Messrs. Shepherd and Schinckel, of Kybybolite, have been topdressing for several years; their names are now well known. Mr. J. N. Marshall, of Nairne, has so improved his land by topdressing and sowing Subterranean clover that practical men aver that he will be able to carry 2,500 sheep on a holding, which for the previous owner only carried about 500. Coming nearer home, Mr. W. H. Hart has raised trefoil a foot high by topdressing, and on a piece of land in his orchard which, he says, 'is too poor to grow piemelons,' he now shows several kinds of clover growing abundantly, and no seed sown, and on the adjoining patch no clover is seen. Why? Because clovers must have phosphates. Mr. Hart states that his sheep have given 1lb. of wool more per head as a result of the fertilisation of his

land, and he runs more than a sheep to the acre. Mr. C. C. Nitschke affirms that he has doubled the carrying capacity of his land. At the recent Farmers' Day at Kybybolite, Professor Perkins, in reply to the question, 'Why is it that Subterranean clover has only lately come into such prominence, yet has been growing so long in South Australia?' replied, 'That it has only recently been demonstrated how it would respond to superphosphate.' Some say that they do not see any difference in the natural grasses from the application, but the stock do, and will graze to the line where it has been applied. The experiences of Mr. Jas. Corcoran, sen., is that it has made clover grow abundantly where none was seen before. Mr. Cowan, of Hatherleigh, has turned poor tussocky land into a fine grazing property by topdressing and sowing clovers. Messrs. Hutchesson & Son are so convinced of its value that they contemplate setting the distributor at work early in March, and keeping it going well into the spring, and hope to get the best part of 100 tons distributed in that time." The Chairman (Mr. Haines) said his experience was that his sheep would persist in grazing on the land that had been topdressed, especially where Subterranean clover was sown, and he had to take them off the land to allow the clover to mature its seed. Mr. B. Bell's experience was that the whole of a paddock should be topdressed in the one season, for his stock would only feed where the fertiliser had been distributed, and did not give the plants a chance to seed.

ALLANDALE EAST, February 6th.—The subject "Noxious Weeds" was brought before the meeting, and an instructive discussion followed.

Two a Month

That is the rate at which new Branches of the Agricultural Bureau are being formed in South Australia at the present time. Is there a Branch

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T. BUTTERFIELD,

Minister of Agriculture.

INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

[Replies supplied by MR. ALAN H. ROBIN, B.V.Sc., Veterinary Officer, Stock and Brands Department.]

"G. A. T.," Smith's Bay, has blood mare with cough.

Reply—The coughing is probably due to the change out of the warm air of the stable in which the horse is shut up overnight into the cooler, fresh morning air outside. At this time of the year there should not be any need for stable overnight. Leave him outside. If necessary, a light rug could be supplied. See the chaff is of good quality and not dusty, and damp the feed.

"G. E. G.," Clare, reports young pigs, weak on legs, scaly skin, always hungry, but do not put on condition.

Reply—Give an occasional dose of Epsom salts in sloppy feed (1oz. to 2oz. per pig, according to age). Amend feed ration, substitute grain for pollard, and, if possible, lucerne for grass. Give pigs a daily dose of 1oz. cod liver oil. Watch closely for evidence of worm infestation, and if found treat for same.

"F. N. T.," Rudall, reports horse with slipped shoulder. A blister was applied but a chronic sore has developed at the point of the shoulder.

Reply—The animal is affected with an open shoulder joint and treatment is not likely to end in satisfactory results so far as his regaining his capacity for working. If it were a mare, the animal could be saved for breeding purposes only.

"R. B. P.," Paruna, reports cow giving blood-tinged milk from a quarter.

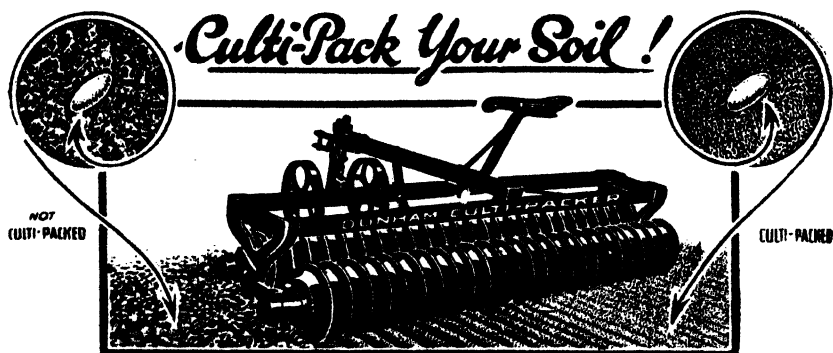
Reply—Re cow with blood in milk. The milk from the other three teats should be quite fit for use. The blood in milk in the other quarter may be due to a slight injury to or some slight weakness in that quarter. Collect that discolored milk into another old tin, and destroy same. Milk very gently, particularly when stripping that quarter. Smear a little boracic ointment over the teat between milkings to protect the quarter from possible outside contamination. Feed carefully, avoiding the use of over-stimulating feed, and put a handful of Epsom salts in the feed daily.

"J. McN.," Mount Damper, reports horse with film over eye. Inquirer states that he has tried blowing sugar in the eye, but it has not had any good effect.

Reply—Discontinue the use of the sugar. Try the following lotion:—Zinc sulphate, 24gr.; boracic acid, 16gr.; distilled or boiled water, 4 fluid ounces. Bathe the eyes in lukewarm boracic solution first to clear away any discharge. Then put a few drops of the above into the eye so that it runs all over the eyeball. Inject this at blood heat temperature four or five times a day. The horse should be kept in a darkened stable, or if this cannot be done, cover the eye with a calico shield to protect it from sunlight.

"L. S. P.," Rockleigh, asks if salt is added to drinking water would it act as a check in preventing sheep from being flyblown.

Reply—A supply of salt is essential to the physical well-being of sheep, and those sheep which get it are usually in better general health than those which do not and are not so prone to be struck by fly.



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"B. H. R.," Clare, has cow, loss of appetite, dry cough, scours, and losing condition rapidly.

Reply—The cow may have picked up and swallowed a foreign body, such as a piece of wire, nail, &c., which would account for the symptoms described. If this is the case, treatment may quite likely prove unavailing. The following treatment is suggested as being most likely to produce satisfactory results. Give cow a good purgative drench (Epsom salts 1lb., molasses or treacle 1lb., ginger 2oz., water 1½ pints to 2 pints). Feed on sloppy feed, if possible adding green feed to ration. Mix a teaspoonful of powdered nux vomica in a little treacle or honey, and put on back of tongue twice a day.

"H. B. M.," Meadows, has litter of pigs. Sow died two weeks after farrowing. The legs and knees of the suckers are swollen, and they are unable to walk.

Reply—The suckers are rickety, and have contracted the condition from the sow, whose vitality was weakened through receiving deficient rations prior to farrowing. The chief causes of this trouble arising are insufficiency of phosphate, lime, and protein. To avoid this trouble arising, which is always better and more satisfactory than cure, pregnant sows, especially young ones, should be judiciously handled and well fed during pregnancy, especially in the last few weeks, and the ration should be rich in these items. Such feed as skim milk, meat meal, linseed meal, are all rich in protein, and one or more of these should be included in the ration, also, lucerne, some of which should be fed as green feed, if available, preferably letting the sows graze off it, as exercise is as important a factor as feeding with pregnant sows. If pregnant sows do not take exercise voluntarily (and often this is the case) they should be forced to do so. They should not be allowed to get overfat, but should be fed so as to gain about 1lb. weight a day, and trouble at farrowing time will be avoided. Mineral mixtures are necessary to pigs of any age, more especially to pregnant sows, and the following mixture should be provided and fed in the feed:—Common salt 20 parts, ground bonemeal 40 parts, air-slaked lime 40 parts (allow 1lb. of this per sow per month). The young suckers should be fed on a ration including plenty of whole milk, to which is added two tablespoonfuls of lime-water for every pint. Cod liver oil, two tablespoonfuls, can be given daily to them.

"H. S.," reports young horse with sore heels and fetlocks, giving off an offensive odor.

Reply—Give the horse a dose of physic, either an aloes physic ball, or raw linseed oil 1½ pints, turpentine 2oz. Then subsequently give him a tablespoonful of Fowler's solution of arsenic twice daily in the feed for a fortnight. Knock it off for a fortnight, and repeat again. If possible, green feed as portion of the ration would be very helpful. Give the sores on the leg a thorough cleaning with soap and warm water, clipping the hair off the parts in order to thoroughly expose the sores. Subsequently keep watery dressings away from the parts. Get some liquor ferri perchlor. fort. Rub a little of this into the sores with a piece of rag. Re-apply every three or four days at first, later on once a week. If this dressing seems to lose its drying effect after a time, substitute the following dry dressing daily for a week, after which return to the iron treatment:—Boracic acid, slaked lime (powdered), common salt—equal parts of each.

[Replies supplied by Mr. C. M. McKenna, B.V.Sc., M.R.C.V.S., Veterinary Officer, Stock and Brands Department.]

"G. F. M.," Moorak, asks treatment for foot rot in sheep.

Reply—Foot rot is contagious. Flock should be yarded, and all feet trimmed short. Avoid drawing blood. Use a sharp knife and hoof cutters (old pair of secateurs). Carefully dress diseased feet, remove all loose and diseased horn, clean out pus and dirt with tow, and dress with strong disinfectant, e.g., Jeye's fluid. Place all affected sheep together. Sweep up and burn all horn parings and debris. Now put healthy sheep, followed by affected ones, through a foot bath of copper sulphate solution (1lb. bluestone to gallon water). Allow affected sheep to stand two to three minutes in bath, and then isolate them in a dry paddock. Repeat foot bath treatment two to three times weekly until cured. For foot bath, use a shallow trough with a roughened bottom (about 20ft.

long). Let it into floor of a narrow race. Preventive measures are (1) pasture sheep on driest part during wet season, (2) keep feet trimmed short, (3) early isolation and treatment of affected sheep.

"W. H. P.," Grace Plains, reports cow with hard teat and udder, clotted milk, and the animal flinches when milked from the affected quarter.

Reply—The cow has mammitis. Isolate and milk her after the others are finished. Give frequent hot fomentations, and massage the udder with warm camphorated oil. Strip as often as possible during the day, and destroy the milk. Disinfect the hands both before and after attending to cow. Feed on green feed if available.

"H. H. W.," Paruna, has horse with hip down.

Reply—The injury is usually not a serious one. If rested for five or six weeks the lameness generally wears off at the end of that time. The deformity will remain.

"G. F.," Paruna, reports (1) blindness in sheep. Eyes inflamed, and film over the pupil, also (2) horse with hard lump on off front foot.

Reply—(1) The condition is a contagious inflammation of the eye, and is caused by germ infection. The disease is a common one of sheep. Isolate affected ones, and put in paddock with plenty of shade, feed, and water. Clean eyes with a warm solution of boracic acid, and three or four times daily put in a few drops of the following lotion:—Zinc sulphate 2 drams, boracic acid, 1 dram, boiled water 1 pint. Further, give affected sheep 1oz. (lambs ½oz.) of Epsom salts dissolved in a little water as a drench. (2) If swelling is not affecting the horse I would not advise interference. The best treatment would be a blister of red iodide of mercury (1 to 8). Clip hair over area, and rub in ointment for 10 minutes. Then tie up short for a few hours to prevent it licking part. If necessary, repeat treatment in six weeks.

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HARVEST REPORTS, 1924.

[By W. J. SPAFFORD, Chief Agricultural Instructor, and S. C. BILLINGHURST, Manager.]

This farm consists of 3,041 acres, comprising sections 26, 27, and 28, in the hundred of Minnipa, and is situated 158 miles north of Port Lincoln, on the Port Lincoln to Cape Thevenard railway.

It is fairly centrally placed in relation to the whole of Eyre Peninsula, and is the point from which departmental activities in agricultural matters on that vast stretch of arable land will proceed.

The greater part of the farm will be arable when the natural growth has been removed. It consists of soil varying from light-colored, light-textured sands, carrying broom-brush and porcupine, to heavy calcareous soils, with a tendency to run together and set hard.

The bulk of this land is between these two extremes, and consists of calcareous soils of medium texture, carrying naturally big mallees, and large bushes as undergrowth. The land which has been used for cultivation on this farm has been grubbed, and so freed practically of all stumps and roots.

At the present time there are approximately 1,200 acres of this land cleared, and additions are being made to this annually.

The above-mentioned sections were dedicated a reserve for agricultural purposes in November, 1914, and work was commenced and a manager appointed on January 1st, 1915.

THE SEASON, 1924.

During the first three months of the year only 121 points of rain fell, and as it was spread over nine raining days it was of very little use for preparing "stubble" land or for working the fallow. Plenty of rain in April allows of "early" seeding with the soil in good condition, but it was not possible this season, because only 25 points of rain fell between four days. Hence the "stubble" land was seeded "dry." Just over an inch of rain fell in May, and almost two inches in June, so the cereal crops got quite a fair start. This was followed by an almost rainless July—only seven points being recorded for the month—and as a consequence at this time the crops were very backward and poor, and things were looking quite serious. Fair rains in August and September and good falls in October altered things for the better, and in the end fair crops were matured, despite hot winds during the end of October and early November which

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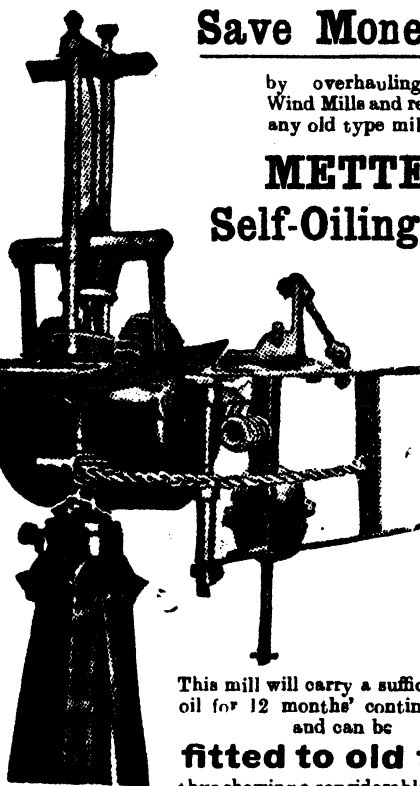
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"blighted" some plants and "tipped" the heads of others. Very suitable weather was experienced during harvesting operations, and grain of very high quality was harvested.

Details of the rains received since 1915, and of the distribution of this season's rain, are set out in the next two tables:—

Rainfall Distribution at Minnipa, 1915-1924.

	Means, 1915 1917.	1918.	1919.	1920.	1921.	1922.	1923.	1924.	Means, 1915- 1924.
	In.	In.	In.	In.	In.	In.	In.	In.	In.
January	1.19	0.46	0.50	1.02	2.69	0.53	—	0.47	0.92
February	0.18	0.02	2.49	—	4.69	0.44	—	0.44	0.86
March	0.47	0.46	0.02	0.42	3.17	0.04	0.07	0.30	0.59
April	0.62	0.97	0.58	0.43	0.54	0.44	0.31	0.25	0.54
May	2.03	1.14	0.66	2.14	2.14	1.37	1.22	1.02	1.58
June	2.73	1.41	0.74	3.31	2.11	1.10	2.54	1.93	2.13
July	3.07	0.77	0.70	2.15	0.88	2.06	2.25	0.07	1.81
August	3.10	2.68	0.81	2.83	0.78	1.50	1.79	1.45	2.11
September	2.04	0.05	1.32	1.97	0.68	0.50	1.32	1.32	1.33
October	1.26	1.45	0.65	2.05	1.07	0.31	0.72	2.55	1.26
November	0.88	—	0.11	1.40	0.61	0.03	—	0.35	0.52
December	0.30	0.61	1.49	0.36	1.52	1.70	1.57	0.19	0.83
Totals	17.83	10.02	10.07	18.08	20.88	10.07	11.79	10.34	14.48
Total "Useful" rain, (April-November) ..	15.74	8.47	5.57	16.28	8.81	7.38	10.15	8.94	11.28

Distribution of "Useful" Rainfall, Minnipa, 1915-1924.

	1924.	Means 1915-24.
	In.	In.
Seeding rains (April-May) ..	1.27	2.12
Winter rains (June-July) ..	2.00	3.94
Spring rains (August-October) ..	5.32	4.70
Early summer rains (November) ..	0.35	0.52
Total "useful" rain ..	8.94	11.28

CROPS.

Seeding operations were commenced on April 10th with oat varieties on "stubble" land, and completed on June 14th with wheat on "new" land.

As in the previous year, there was not sufficient rain to germinate the wild mustard seed on the fallow, hence, additional seed was sown per acre with the hope of crowding out the mustard. To a certain extent this was satisfactory, as was shown by the thickly-grown mustard in the divisions between varieties.

The germination in many places was only fair. This was particularly so in Field No. 1A., which has many large patches of hard, red soil that runs together when wet.

The total area cropped with cereals this year, namely, 530.87 acres, was made up as follows:—

	Acres.
Fallowed land	198.74
“Stubble” land	223.17
“New” land	108.96

530.87

From this table it will be seen that “stubble” land carried the largest area of crop, and yielded 9bush. 5lbs. of wheat per acre, and 14bush. 8lbs. of oats per acre. “New” land, unfortunately, was seeded late under trying conditions, followed by a very dry July, and even then showed a yield of 10bush. 40lbs. wheat per acre.

HAY CROPS.

The oats, from which it was anticipated the bulk of the hay would be cut, were very short, consequently, it was necessary to cut rather heavily into the wheats on fallow land; even these only returned 18cwts. 63lbs. per acre. A total of 74 tons of hay was cut from 100.65 acres: an average yield of 14cwts. 79lbs. per acre.

Hay Yields, Minnipa, 1924.

Kind of Hay.	Area. Acres.	Total Yield.			Yield per Acre.		
		T.	C.	L.	T.	C.	L.
Wheat (No. 1, fallow)	37.70	35	0	0	0	18	63
Wheat (No. 9, fallow)	6.70	5	0	0	0	14	104
Headlands (Nos. 1A and 2)	2.86	2	0	0	0	13	110
Oats (Nos. 16, 17, and 18, stubble)	31.10	20	0	0	0	12	96
Wheat (Nos. 7 and 14, “new” land)	22.29	12	0	0	0	10	85
Farm average	100.65	74	0	0	0	14	79

Hay Returns, Minnipa, 1915-1924.

Year.	Total “Useful” Rainfall.		Area. Acres.	Total Yield.			Yield Per Acre.		
	In.	In.		T.	C.	L.	T.	C.	L.
1915	13.88	12.59	148.00	280	0	0	1	17	94
1916	18.02	16.62	2.34	4	0	0	1	14	19
1917	21.69	18.00	47.85	82	10	0	1	14	54
1918	10.02	8.47	30.60	28	0	0	0	18	34
1919	10.07	5.57	55.13	35	0	0	0	12	78
1920	18.08	16.28	62.99	165	15	93	2	12	72
1921	20.88	8.81	41.11	56	7	56	1	7	48
1922	10.07	7.36	112.19	147	0	0	1	6	23
1923	11.79	10.15	80.62	132	0	0	1	12	84
1924	10.34	8.94	100.65	74	0	0	0	14	79
Means	14.84	11.28	—	—	—	—	1	9	14

OAT CROPS.

The main oat crops for grain were sown on stubble land at the rate of 60lbs. of Scotch Grey with 90lbs. 45 per cent. super per acre. Other varieties were sown at the rate of 70lbs. of seed with a similar manurial dressing.

The germination was very slow, and winter conditions being unfavorable, the growth was very much checked. Rain during October caused the undergrowth, which otherwise would have died, to come into ear, thus there were green and ripe ears at the same time. This delayed harvesting for some considerable time. Strong winds on October 18th and 26th and November 6th and 20th caused much damage and loss of grain by shaking; especially in the Early Burt, Lachlan, Early Bathurst, Kelsall's and Mulga varieties.

The following table shows the individual yields of the varieties grown this year, and also the farm average over the period 1916-1924.

Yields of Oat Varieties, Minnipa, 1924.

Variety.	Field No.	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
Kelsall's	7	0.08	3 0	37 20
Glen Innes No. 5	7	0.10	2 16	24 0
Kherson	16, 17, and 18	16.74	308 0	18 16
Bathurst No. 4	16, 17, and 18	0.81	11 21	14 9
Glen Innes No. 9	7	0.20	2 30	13 30
Scotch Grey	16, 17, and 18	40.37	551 2	13 26
Wilga	7	0.10	1 14	13 20
Guyra	16, 17, and 18	0.83	10 7	12 10
Algerian	9	6.00	73 11	12 9
Lachlan	16, 17, and 18	3.35	38 6	11 16
Kelsall's	9	1.24	11 4	8 38
Early Burt	16, 17, and 18	5.70	50 30	8 36
Early Bathurst	16, 17, and 18	1.27	10 25	8 15
Mulga	9	3.40	16 24	4 35
Farm average		80.19	1,090 30	13 24

The farm average of 13bush. 24lbs. per acre for the 1924 oat crop is much lower than was to be expected at this farm, because the average yield for the 8-year period, 1916 to 1923, was 29bush. 20lbs., and, as a matter of fact, it is not a correct measure of what the crops were before the heavy winds caused such considerable losses from some varieties. The addition of this year's crop results to the result of oat crops produced at the farm reduces the mean yield to 27bush. 34lbs. per acre, as is set out in the next table:—

Oat Returns, Minnipa, 1916-1924.

Year.	Total Rainfall. In.	Useful Rainfall. In.	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
1916	18.02	16.62	49.90	1,987 20	39 33
1917	21.69	18.00	10.39	461 22	44 17
1918	10.02	8.47	21.03	568 12	27 1
1919	10.07	5.57	14.75	85 16	5 32
1920	18.08	16.28	20.92	903 30	43 48
1921	20.88	8.81	15.65	440 2	28 5
1922	10.07	7.36	25.04	398 8	15 36
1923	11.79	10.15	46.27	1,465 33	31 27
1924	10.34	8.94	80.19	1,090 30	13 24
Means	14.55	11.13	—	—	27 34



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Fescues	Cow Grass	Strawberry Clover

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Quite a number of varieties of oats have been grown at Minnipa for the past two seasons, and both Scotch Grey and Algerian have been grown continuously since 1917, and the yields secured from these different kinds are exhibited below:—

Yields of Oat Varieties, Minnipa, 1917 to 1924.

	Means 1917 to 1922.	1923.	1924.	Means. 1923-1924.
	Bush. lbs.	Bush. lbs.	Bush. lbs.	Bush. lbs.
Kherson	—	39 39	18 16	29 7
Guyra	—	38 6	12 10	25 8
Scotch Grey	29 28	35 20	13 26	24 23
Bathurst 4	—	34 9	14 9	24 9
Kelsall's	—	31 23	10 27	21 5
Mulga	—	36 16	4 35	20 25
Lachlan	—	29 2	11 16	20 9
Algerian	29 7	27 5	12 9	19 27
Early Burt	—	28 3	8 36	18 19
Early Bathurst	—	27 7	8 15	17 31
Glen Innes 5	—	—	24 0	—
Glen Innes 9	—	—	13 30	—
Wilga	—	—	13 20	—
Farm average	27 16	31 27	13 24	22 25
Rainfall	15.14in.	11.79in.	10.34in.	11.06in.

BARLEY CROPS.

Only Tunis No. 1 barley was seeded this year on "new" ground, at the rate of 75lbs. of seed and 90lbs. of 45 per cent. super per acre. The season was rather unsuitable for growing barley, and this crop did remarkably well to yield 18bush. 33lbs. per acre.

The following tables will show individual yield for 1924, and details of all barley crops grown at the farm since 1917:—

Yield of Barley, Minnipa, 1924.

Variety.	Field	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
Tunis No. 1	14	8.85	165 4	18 33

Barley Yields, Minnipa, 1917-1924.

Year.	Total Rain. In.	Useful Rain. In.	Area. Acres.	Total Yield. Bush. lbs.	Yield Per Acre. Bush. lbs.
1917	21.69	18.00	7.13	233 34	32 39
1918	10.02	8.47	11.85	261 39	22 5
1919	10.07	5.57	8.07	49 24	6 7
1920	18.08	16.28	Lodged too badly to harvest.		
1921	20.88	8.81	10.08	192 1	19 2
1922	10.07	7.36	33.63	582 43	17 16
1923	11.79	10.15	28.96	884 42	30 28
1924	10.34	8.94	8.85	165 4	18 33
Means	14.12	10.44	—	—	18 16

WHEAT CROPS.

The farm average for wheat this year, 10bush. 34lbs. over an area of 341.18 acres, though under the general average, may be taken as a satisfactory return, especially when it is considered that 121.78 acres was "stubble" land, and that the crop was grown with only 8.94in. of rain.

Fallow Land.—The yields from fallow show an increase over "new" land of 1bush. 8lbs., and over "stubble" land of 2bush. 43lbs. This difference would, undoubtedly, have been greater had it not been for the inclusion of experimental plots, which tend to reduce the total average. For example, such plots as "no manure" in manurial tests, and the low seedings in the "seeding" tests, all help to reduce the average.

Wheat Varieties on Fallow, Minnipa, 1924.

Variety.	Field No.	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
Canberra	9	3.29	59 11	17 59
Gluyas	1	10.92	187 55	17 13
Faun	9	4.14	64 52	15 40
Gypsy	9	2.04	31 34	15 28
Felix	1	1.73	25 17	14 37
Canaan	9	4.31	59 42	13 51
Smut Proof	9	0.88	11 53	13 30
Maharajah	9	2.07	27 44	13 24
King's White	1	9.02	118 46	13 10
President	1	15.96	206 57	12 58
Baroota Wonder	9	1.94	24 59	12 53
Currawa	9	2.83	33 45	11 56
Currawa	1A	23.42	272 7	11 37
Federation	9	3.43	38 52	11 20
Walker's Wonder	9	6.31	71 13	11 17
Sultan	1	25.32	271 49	10 44
Emperor	Exp.	16.80	126 17	7 31
Emperor	Exp.	7.65	44 17	5 47
Farm average on fallow, 1924 . .		142.06	1,677 10	11 48

The rate of seeding for all varieties on fallow was 70lbs. seed and 90lbs. of 45 per cent. super per acre.

"Stubble" Land.—This land was cultivated between April 11th and 29th, 1924, and harrowed soon after drilling. Caliph seed was used at the rate of 70lbs. with 90lbs. of 45 per cent. super per acre—this was drilled between April 22nd and 29th. As this was used for pickling tests further details will appear under the heading of "Pickling Tests."

Wheat Yields on "Stubble" Land, Minnipa, 1924.

Variety.	Field No.	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
Caliph	2	112.78	1,056 26	9 22
Mixed wheats	2	9.00	50 3	5 34

Farm average on stubble land, 1924 . . . 121.78 . . . 1,106 29 . . . 9 5

"New" Land.—Owing to the extreme difficulty experienced in clearing up this land ready for the plough, it was not seeded until late. It was ploughed between May 26th and June 6th, and harrowed immediately after seeding. Unless otherwise stated, it was seeded with 70lbs. seed and 90lbs. of 45 per cent. super per acre.

The following table shows individual yields for 1924.

Wheat Yields on "New" Land, Minnipa, 1924.

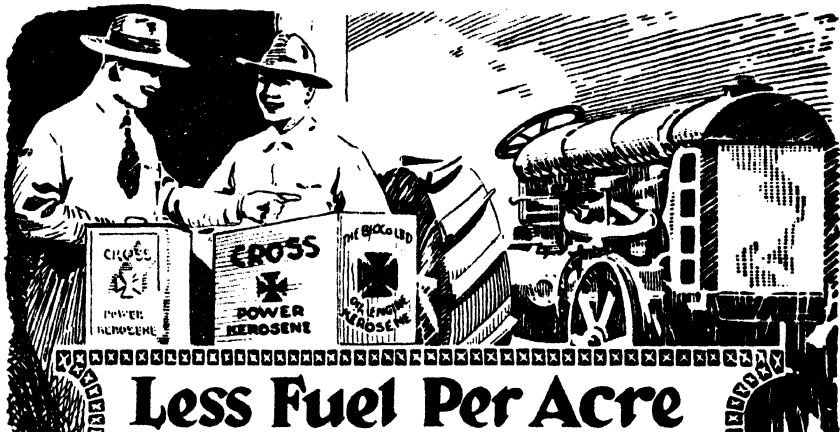
Variety.	Field No.	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
Currawa	7	0.74	10 44	14 30
Geeralying	7	0.73	10 34	14 28
Greasley	7	0.35	4 50	13 49
Canaan	7	0.74	9 53	13 21
Belka	7	0.35	4 38	13 14
Caliph	14	13.34	172 25	12 55
Nangarin	7	0.57	7 18	12 48
Caralim	7	0.54	6 49	12 37
Federation	7	0.16	1 46	11 20
Nangeenan	7	0.55	6 13	11 18
Meredin	7	0.85	9 16	10 54
Late Gluyas	14	9.23	97 57	10 37
Mixed wheats	14	1.77	18 44	10 35
Nizam	7	0.67	7 3	10 31
Felix	7	0.13	1 21	10 23
Queen Fan	14	26.46	274 26	10 22
Silver Baart	7	4.23	42 37	10 1
Pindiloo	7	0.54	5 23	9 58
Acme	7	1.05	9 56	9 28
Rajah	7	5.68	53 36	9 26
Waratah	7	0.05	0 28	9 20
Nabawa	7	0.54	4 50	8 57
Rajah	Exp.	5.53	52 16	9 27
President	7	0.54	4 34	8 27
King's White (headlands) . . .	---	2.00	7 23	3 42

Farm average on "new" land, 1924 . . . 77.34 . . . 825 0 . . . 10 40

The returns secured from the various soil treatments, as set out above, when grouped together, as in the next table, show the farm average for the year to be 10bush. 34lbs.

Farm Wheat Average, Minnipa, 1924.

Where Grown.	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
Fallow	142.06	1,677 10	11 48
Stubble land	121.78	1,106 29	9 5
New land	77.34	825 0	10 40
Total wheat average, 1924 . .	341.18	3,608 39	10 34



Less Fuel Per Acre

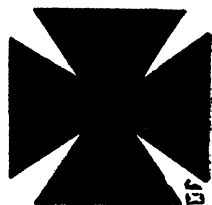
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Taken over a period of nine years, the farm average for wheat is 18bush. 38lbs. Taking into consideration that this includes a big range of varieties, different soil cultivations, numerous rates of seeding, some years of low rainfall, various manurial and pickling treatments, and other experimental work, the prospects of much higher returns are bright once fallowing and thorough tillage are practised, and sheep are introduced on the farm.

For the period mentioned, the average annual "total" rainfall has been 14.55in., and the average annual "useful" rainfall 11.13in.

Wheat Returns, Minnipa, 1916-1924.

Year.	Total Rainfall.	Useful Rainfall.	Area. Acres.	Total Yield.		Yield per Acre.	
	In.	In.		Bush.	lbs.	Bush.	lbs.
1916	18.02	16.62	171.73	4,908	6	28	35
1917	21.69	18.00	76.65	1,999	34	26	5
1918	10.02	8.47	141.37	3,022	55	21	23
1919	10.07	5.57	112.52	980	40	8	43
1920	18.08	16.28	196.51	5,040	8	25	39
1921	20.88	8.81	219.96	2,058	24	9	21
1922	10.07	7.36	472.04	7,234	36	15	20
1923	11.79	10.15	480.97	10,610	6	22	4
1924	10.34	8.94	341.18	3,608	39	10	34
Means	14.55	11.13	—	—	—	18	38

The following table will show that from the year 1918 to 1924, wheat on fallow, showed an advantage over new land of just under 4bush. per acre:—

Wheat Yields From Various Soil Conditions, Minnipa, 1918-1924.

Year.	Total. Rain.	Useful Rain.	"New"		"Stubble."		Farm Average.
	In.	In.	Fallow. Bush. lbs.	Land. Bush. lbs.	Bush. lbs.	Bush. lbs.	Bush. lbs.
1918	10.02	8.47	23 44	14 12	18 14	21 23	
1919	10.07	5.57	9 36	9 21	3 11	8 43	
1920	18.08	16.28	30 8	22 38	13 5	25 39	
1921	20.88	8.81	10 4	8 2	9 0	9 21	
1922	10.07	7.36	12 37	16 3	—	15 20	
1923	11.79	10.15	24 42	15 56	20 51	22 4	
1924	10.34	8.94	11 48	10 40	9 5	10 34	
Means	13.03	9.37	17 31	13 50	—	16 9	

Unfortunately, no wheat was grown on "stubble" land in 1922, so that a figure to compare with fallow and "new" land cannot be given for the period set out above, but for the two periods when the crops grown on these different soil conditions are strictly comparable the returns have been as follows:—

Wheat Grown on—		Wheat per Acre per Year.	
		1918-1921.	1923-1924.
		Bush. lbs.	Bush. lbs.
Fallow		18 23	18 15
"New" land		13 33	13 18
Stubble		10 52	14 58

Records are kept of the behavior of all varieties grown at this farm, and the next table shows the grain returns secured from the wheat varieties grown on fallowed land. Only those wheats grown on fallow are presented below, because in the very near future practically all of the wheat grown in this and similar districts will be on bare-fallow, and it is of the utmost importance that we know how the principal types of South Australian wheats will behave on fallow.

Yields of Wheat Varieties on Fallow, Minnipa, 1920-1924.

Variety.	1920.		1921.		1922.		1923.		1924.		Means 1923-1924.	
	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.
Currawa	35	48	10	54	—	—	33	57	11	39	22	48
Gluyas	31	23	11	53	—	—	24	3	17	13	20	38
Canberra	—	—	—	—	—	—	21	21	17	59	19	40
Faun	—	—	—	—	—	—	23	36	15	40	19	38
Sultan	32	38	14	27	—	—	28	23	10	44	19	33
Felix	32	37	14	8	—	—	23	14	14	37	18	55
King's White	32	17	9	9	—	—	24	28	13	10	18	49
President	32	53	15	38	—	—	24	24	12	58	18	41
Walker's Wonder	31	35	6	2	15	39	24	26	11	17	17	57
Canaan	—	—	—	—	—	—	21	39	13	51	17	45
Federation	29	19	9	26	10	16	23	15	11	20	17	17
Baroota Wonder	33	17	7	33	13	23	20	43	12	53	16	48
Florence	29	51	9	1	13	59	16	55	13	30	15	12
Emperor	30	43	17	37	—	—	20	47	6	59	13	53
Gypsy	—	—	—	—	—	—	—	—	15	28	—	—
Maharajah	29	43	16	56	—	—	—	—	13	24	—	—
Late Gluyas	26	16	9	51	13	29	28	32	—	—	—	—
Silver Baart	27	30	7	37	12	47	25	47	—	—	—	—
Rajah	30	12	11	49	—	—	25	56	—	—	—	—
Queen Fan	—	—	—	—	10	15	27	20	—	—	—	—
Caliph	—	—	—	—	—	—	28	57	—	—	—	—
Farm average	30	8	10	4	12	37	24	42	11	48	18	15
Rainfall	18.08in.		20.88in.		10.07in.		11.79in.		10.34in.		11.06in.	

It is certainly rather unfortunate that so very few kinds were sown on fallowed land in 1922, because it does not allow of average yields for a period of years greater than the past two, being exhibited, but in the future an attempt will be made to grow an area of all promising varieties on fallowed land, so as to secure these very useful mean yields.

EXPERIMENTAL PLOTS.

Manurial Tests.—With the object of ascertaining the manurial value of "Ephos" Basic Phosphate, and Triple Superphosphate, as compared with 45 per cent. Superphosphate, the undermentioned plots were sown on May 23rd on fallow. These plots were sown with Emperor wheat at the rate of 60lbs. per acre, and harrowed soon after being drilled.

Manurial Tests on Fallow, Minnipa, 1924.

Variety:—Emperor.

Manure per Acre.	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
180lbs. 45 per cent. super	0.78	7 59	10 14
77lbs. triple phosphate	0.76	5 34	7 19
No manure	0.75	3 51	5 8
132lbs. "Ephos" basic phosphate	0.78	5 11	6 39
90lbs. 45 per cent. super	0.78	7 0	8 58
38½lbs. triple phosphate	0.76	7 29	9 51
No manure	0.75	5 6	6 48
66lbs. "Ephos" basic phosphate	0.79	5 17	6 41
Check	10.65	78 50	7 24

To determine the effect of varying dressings of superphosphate to wheat, plots were again sown with quantities ranging up to 3cwt. per acre. The results are tabulated below:—

Manurial Tests on "New" Land, Minnipa, 1924.

Variety:—Rajah.

Manure per Acre.	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
No manure	1.09	7 0	6 25
½cwt. 36 per cent super	1.11	9 9	8 15
1cwt. 36 per cent. super	1.11	11 0	9 55
2cwt. 36 per cent. super	1.11	13 0	11 43
3cwt. 36 per cent. super	1.11	12 7	10 55
Check	5.68	53 36	9 26

These tests with different quantities of superphosphate on wheat have been conducted each season for the past eight years, and the average yields from the different plots are quite interesting, and are set out in the next table:—

Manurial Tests With Wheat, Minnipa, 1917-1924.

Year.	Yield per Acre.							
	No Manure.	½cwt. Super.	1cwt. Super.	2cwt. Super.	3cwt. Super.	Farm Average.	Total Rain.	Useful Rain.
	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.	In.	In.
1917	15 35	26 48	29 39	31 17	31 9	26 5	21.69	18.09
1918	8 6	10 47	9 53	10 38	13 46	21 23	10.02	8.47
1919	2 44	6 12	7 47	10 7	9 57	8 43	10.07	5.57
1920	19 36	21 54	20 54	21 16	24 9	25 39	18.08	16.28
1921	3 13	6 58	8 35	8 53	8 24	9 21	20.88	8.81
1922	10 39	14 57	15 58	15 28	15 45	15 20	10.07	7.36
1923	20 26	23 8	24 53	25 44	26 51	22 4	11.79	10.15
1924	6 25	8 15	9 55	11 43	10 55	10 34	10.34	8.94
Means	10 50	14 52	15 57	16 53	17 37	17 24	14.12	10.44

With these manurial tests very similar results have been obtained to what is the common experience of most districts in South Australia possessing soils well supplied with lime, viz., that the first ½cwt. of superphosphate gives a very large increased yield of grain over and above the crop grown without manure, and that using heavier dressings of superphosphate gives increased crops up to dressings of

3cwt. superphosphate per acre, although the increases from the higher dressings are not in proportion to those secured from the lighter applications. The next table shows the money value of these increases when superphosphate is taken at 5s. per cwt. and wheat at 3s. 9d. a bushel:—

Monetary Value of Increases From Use of Superphosphate.

Manuring per Acre.	Mean Yields. 1917-1924. Bush. lbs.	Increases over No Manure. Bush. lbs.	Value per Acre of Increases. £ s. d.
No manure	10 50	—	—
½cwt. superphosphate	14 52	4 2	0 12 7
1cwt. superphosphate	15 57	5 7	0 14 2
2cwt. superphosphate	16 53	6 3	0 12 8
3cwt. superphosphate	17 37	6 47	0 10 5

TESTING THE EFFECTS OF DIFFERENT QUANTITIES OF SEED PER ACRE.

For the past seven seasons plots have been conducted in which different quantities of seed wheat has been sown, and for this season the following results have been secured:—

Rate of Seeding Tests With Wheat, Minnipa, 1924.

Variety:—Emperor.

Seed per Acre.	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
30lbs. seed	1.14	6 14	5 28
40lbs. seed	1.24	7 42	6 13
50lbs. seed	1.26	6 25	5 6
60lbs. seed	1.32	6 53	5 13
75lbs. seed	1.30	7 39	5 53
90lbs. seed	1.39	9 24	6 46

The yields in the above table show very little difference one with the other, but these tests for the period 1918-1924, as set out below, do teach us something in connection with seed requirements at Minnipa:—

Rates of Seeding Tests With Wheat, Minnipa, 1918-1924.

Year.	Yield per Acre.								Total Rain. In.	Useful Rain. In.
	30lbs. seed.	40lbs. seed.	50lbs. seed.	60lbs. seed.	75lbs. seed.	90lbs. seed.	Farm. Average.			
	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.			
1918 ..	16 26	17 34	15 52	17 12	14 17	17 43	21 23	10.02	8.47	
1919 ..	10 10	9 41	10 26	11 53	13 31	12 9	8 43	10.07	5.55	
1920 ..	6 44	7 51	10 41	8 55	11 35	10 31	25 39	18.08	16.28	
1921 ..	6 30	6 47	6 4	6 6	6 2	5 30	9 21	20.88	8.81	
1922 ..	18 33	19 9	19 45	19 52	19 32	19 29	15 20	10.07	7.36	
1923 ..	16 22	18 22	18 41	21 44	24 24	23 35	22 4	11.79	10.15	
1924 ..	5 28	6 13	5 6	5 13	5 53	6 46	10 34	10.34	8.94	
Means .	11 28	12 14	12 22	12 59	13 36	13 42	16 9	13.03	9.37	

The above results show very clearly that more than 30lbs. of seed should be used per acre when wheat is to be grown at Minnipa, and that 75lbs. appears to be the best business proposition in present conditions.

TESTS IN THE CONTROL OF "BUNT."

During 1923 a series of tests was commenced to determine the relative effectiveness of a number of different methods of treating seed wheat for the control of "Bunt" or "Stinking Smut" (*Tilletia tritici*).

The plots, numbered 1 to 5, were sown with seed treated in the manner set out as under:—

Plot No. 1.—Sown with untreated seed.

Plot No. 2.—Sown with seed treated with Faulding's "Dollman's Friend," at the rate of one packet of powder to $1\frac{1}{2}$ galls. of water, which was sufficient to pickle 6 bush. of seed. This was pickled on a concrete floor and turned five times with a shovel, then spread out to dry, and sown the following day.

Plot No. 3.—Sown with seed dusted in an old churn with finely powdered copper carbonate at the rate of 3 oz. of powder to the bushel. It was possible to treat a bushel at a time in this manner. The seed was sown during the day on which it was pickled.

Plot No. 4.—Sown with seed treated with a $1\frac{1}{2}$ per cent. solution of copper sulphate, at the rate of one gallon of solution to a bushel of seed. This was pickled on a concrete floor and turned five times with a shovel, then spread out to dry, and sown the following day.

Plot No. 5.—Sown with seed treated with a $\frac{1}{4}$ per cent. solution of formalin, at the rate of one gallon of solution to a bushel of seed. This was pickled on a concrete floor and turned with a shovel five times, then sown the same day.

FIELD INSPECTION OF "PICKLING" TESTS.

The crops were inspected directly after germination, during the last week in June, and when they had reached maturity. At these inspections the following observations were made:—

Plot No. 1 (untreated seed).—Came away well, there being a very good germination. Stooling was very fair right through the plot. There was evidence of "bunt" through it, but only a trace, not sufficient to have and commercial detriment. Although showing more "bunt" than any other plot it returned the highest yield per acre.

Plot No. 2 ("Dollman's Farmer's Friend").—This came away fairly well. Germination was good. Stooling moderate. The growth showed a slight check as compared with untreated seed. The grain was well filled and practically free from "bunt."

Plot No. 3 (copper carbonate).—This was a little later in coming away than Plot No. 2. Germination was good, and the stooling fair.

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The yield from this was second on the list, the grain was well filled and practically free from "bunt."

*Plot No. 4 (copper sulphate).—*This was very slow in coming away. Germination was poor, but the stooling fair. The grain was well filled. The return was low, but there was no evidence of "bunt."

*Plot No. 5 (formalin).—*This was the last of all in coming away. The germination was poor, and the stooling moderate. The grain was well filled and although free from "bunt" showed the lowest return of all the plots.

Wheat Yields From Various "Pickling" Tests on "Stubble" Land, Minnipa, 1924.

Variety:—Caliph.

Plot.	Pickling Treatment.	Area. Acres.	Total Yield.		Yield per Acre.
			Bush.	lbs.	Bush. lbs.
No. 1.	Untreated seed	19.34	218	2	11 16
No. 2.	Dollman's Farmer's Friend ..	22.70	236	54	10 26
No. 3.	3oz. copper carbonate to 1bush. of wheat	23.62	256	34	10 52
No. 4.	1½ per cent. bluestone solution	24.22	194	2	8 1
No. 5.	¼ per cent. formalin solution .	22.90	150	54	6 35

Wheat Yields From Various "Pickling" Tests on "Stubble" Land, Minnipa, 1923-1924.

Year.	Total	Useful	Un-	"Doll-	Cop.	Cop.	For-	Farm
	Rain.	Rain.	treated.	man's."	Carb.	Sulph.	malin.	Average.
			B. L.	B. L.	B. L.	B. L.	B. L.	B. L.
1923	11.79	10.15	22 15	25 30	23 16	20 35	21 52	22 4
1924	10.34	8.94	11 16	10 26	10 52	8 26	6 39	10 34
Means	11.06	9.54	16 45	17 58	17 04	14 30	14 15	16 19

COMMENTS ON THE PICKLING TESTS.

All of the fungicides used had more or less of a retarding effect on the germination of the seed, when compared with the untreated seed.

Not one of them resulted in a crop absolutely free from the disease, except the bluestone, whilst the copper carbonate and formalin plots showed only the merest trace of "bunt."

The untreated seed showed the highest yield, whilst that treated with formalin was least, which has a tendency to lead one to suspect that in these conditions the germ mortality is greatest with this pickle.

The almost entire absence of "bunt" this season may have been assisted by the seeding of these plots on "dry" land.

POSSIBLE CORRECTION OF CERTAIN SOILS OF THE SOUTH-EAST OF SOUTH AUSTRALIA.

[A paper read before the Australian Association for the Advancement of Science by L. J. COOK, Manager Government Experimental Farm, Kybybolite.]

In the Kybybolite district there are two distinct types of arable soil, namely, cementy ironstone loams and dark heavy soil of the crab-hole nature. The greater portion consists of the former type, to which I purpose confining this paper. It was used practically wholly for grazing purposes until about 20 years ago, and in the native state carried principally large red and white gums, interspersed with ti-tree. The chief natural grass was wallaby grass (*Danthonia semi-annularis*), and the land carried poorly from one-half to three-quarters of a sheep per acre.

The land is mostly slightly undulating, with approximate average slopes of 6in. to 9in. per chain. The soil consists of loam of irregular depths (varying from 8in. to 18in., but averaging about 12in.) on stiff yellow clay. A physical analysis of some of the poorer loam from a field under certain manure tests, revealed the following percentage by weight of fine earth, sand, and ironstone rubble:—Water, 10.8 per cent.; fine earth, 41.2 per cent.; washed sand, 37.4 per cent.; ironstone rubble, 10.6 per cent.

The ironstone rubble varies from 1in. in diameter downwards, but the bulk of it is small and shotty. There is a complete absence of other stone or gravel in the soil. The rubble is more or less distributed throughout the soil layers, but the bulk of it is to be found lying on the surface of the clay subsoil.

The yellow clay subsoil is from 12in. to 24in. deep, and lies over marl. The clay is very stiff, and prevents good movement of soil moisture. Percolation is very slow, and consequently during the wet winter months the soil above the clay quickly becomes saturated, checking the root development and consequent growth of plants. This condition is much more aggravated by the irregular surface of the clay, preventing good drainage along its surface.

CHEMICAL ANALYSES OF THE SOIL.

The following table shows the results of chemical analyses of similar-typed soils, by Dr. W. A. Hargreaves, Director of Chemistry. The samples were collected from four different localities on the farm, each 6in. sample being taken separately to a depth of 3ft. One is virgin soil that has been continuously grazed without manure, and the other three have been under cultivation from 12 to 14 years, and have been variously treated,

SOILS FROM KYRYBOLITE EXPERIMENTAL FARM.

Sample.	Reaction.	Nitrogen.	Organic Carbon.	Lime.	Potash.	Phosphoric Acid.	Total Soluble Salts.	Chlorides (calculated as Sodium Chloride).
		%	%	%	%	%	%	%
Virgin Soil (Grazed continuously)—								
1st six inches	Acid	0.045	0.66	0.073	0.024	Trace	0.012	0.005
2nd "	Acid	0.037	0.62	0.140	0.124	0.017	0.056	0.009
3rd "	Acid	0.023	0.53	0.119	0.095	0.012	0.063	0.011
4th "	Alkaline	0.029	0.25	0.254	0.097	0.014	0.071	0.019
5th "	Alkaline	0.020	0.17	0.938	0.110	0.014	0.099	0.028
6th "	Alkaline	0.013	0.20	8.26	0.091	Trace	0.177	0.075
Cultivated Soil A, Field 9e (Cult. since 1910).								
Limed 1920—								
1st six inches	Alkaline	0.038	0.67	0.123	0.023	0.013	0.018	0.011
2nd "	Alkaline	0.016	0.25	0.035	0.025	0.005	0.009	0.003
3rd "	Alkaline	0.015	0.20	0.049	0.046	0.006	0.012	0.004
4th "	Alkaline	0.038	0.55	0.431	0.140	0.006	0.032	0.003
5th "	Alkaline	0.065	0.60	3.000	0.158	0.005	0.048	0.006
6th "	Alkaline	0.043	0.32	1.599	0.365	0.007	0.049	0.008
Cultivated Soil B, Field 16a (Cult. since 1911)—								
1st six inches	Acid	0.055	0.59	0.071	0.080	0.042	0.013	0.004
2nd "	Acid	0.045	0.43	0.017	0.078	0.010	0.011	0.004
3rd "	Acid	0.022	0.32	0.109	0.132	0.007	0.011	0.004
4th "	Acid	0.043	0.40	0.343	0.182	0.007	0.020	0.007
5th "	Neutral	0.038	0.20	0.603	0.124	0.010	0.023	0.005
6th "	Alkaline	0.026	0.26	0.312	0.155	0.007	0.059	0.005
Cultivated Soil C, Field 4c (Cult. since 1912).								
Limed, 1920—								
1st six inches	Alkaline	0.045	0.98	0.189	0.053	0.039	0.020	0.003
2nd "	Acid	0.033	0.41	0.091	0.063	0.015	0.107	0.005
3rd "	Acid	0.057	0.58	0.175	0.255	0.010	0.020	0.007
4th "	Alkaline	0.034	0.35	0.208	0.281	0.005	0.055	0.006
5th "	Alkaline	0.034	0.36	8.260	0.263	0.009	0.058	0.007
6th "	Alkaline	0.019	0.27	5.600	0.250	0.008	0.031	0.006

The analysis of virgin soil shows a large deficiency of phosphoric acid, and also a lack of lime in the soil, and clay subsoil. Quite appreciable quantities of lime are found below the clay, that is, 2ft. 6in. and further below the ground surface. The reaction test shows the virgin soil to be acid, but the clay below to be alkaline.

Cultivated soil A is a slightly heavier loam than the others, and prior to 1918 was worked under the two-course rotation of oats and bare fallow, when it became badly infested with sorrel. Since 1918 it has been limed, and worked under a six-course rotation system, as follows:—Wheat, oaten hay, turnips, barley, and two years temporary pasture of clover and rye grass. The land has received phosphatic fertiliser with each crop, and has, during recent years, carried some comparatively heavy crops, which possibly accounts for the rather small amount of soluble salts in the surface layers. It is noticeable that the reaction test shows alkalinity throughout the full depth of the soil and subsoil.


Cultivated soil C is also a fairly productive loam of lighter texture, and has been continuously cultivated since 1912. It also became badly infested with sorrel, and of late years has been limed, and worked under the four-course Norfolk rotation. The reaction test shows this soil to be mostly alkaline. It is noticeable that the total nitrogen and organic carbon is higher in both these limed soils than in others tested.

Cultivated soil B is a medium loam, and was variously cropped, mainly with cereals prior to 1921, and also became sorrel infested.

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Since 1921 it has carried a thick growth of subterranean clover, which has crowded out the sorrel. This soil has received applications of phosphatic fertilisers, but no lime. The reaction test of this sample shows acidity to a depth of 2ft.; from 24in. to 30in. the soil is neutral; whilst below that it is alkaline. This tends to show that under cultivation and with the use of superphosphate only the acidity is increased and the surface layers of clay become slightly acid, whereas where lime in one ton per acre dressings has been applied, the acidity is reduced, and an alkaline reaction is given in both soil and clay. These test results are supported by the growth of sorrel. This plant quickly appears on cultivated soil, dressed only with phosphatic fertilisers, whereas on limed soil the sorrel growth is much checked.

Numerous other reaction tests of soil from variously treated plots have recently been taken, and they all show distinct acidity, only overcome by liming. These tests show:—

That continuously cultivating soil, without manuring, tends to increase acidity.

That continuously cultivating soil and dressing with powdered rock phosphate also increases acidity.

Good bare fallow variously fertilised with phosphates showed acid reaction.

Improved natural pasture plots (uncultivated land) showed similar reactions, that is, phosphated only plots showed no improvement from acidity, whilst land top-dressed with lime (1 ton per acre) as well as with superphosphate gave alkaline reaction.

Further, soils that have carried subterranean clover as temporary pasture, manured with superphosphate during the past six to ten years, show at present an acid reaction.

RAINFALL AND CLIMATE.

The soil surface is from 250ft. to 330ft. above sea-level. The average annual rainfall at Kybybolite during the last 18 years has been 22½in. The bulk of this falls during the winter months, as is shown by the average monthly records which are as follows:—

Rainfall Distribution at Kybybolite, 1906-1923.

Month.	Average Fall. Inches.
January	0.44
February	0.91
March	1.08
April	1.20
May	2.59
June	3.08
July	3.08
August	2.74
September	2.80
October	1.91
November	1.53
December	1.25

22.61

The above table shows a very useful precipitation, and a distribution that would not appear to cause much drainage difficulty. However, by carefully analysing records we find that in only about 14 per cent. of the years has the distribution been within 20 per cent. of the average shown on table. A greater percentage of monthly records are below, rather than above, the average, proving that comparatively heavy rains are periodically received. When 4in. to 5in. and sometimes 6in. are precipitated on the soil in winter months, and this is followed by average rains, difficulties with both cultivation and growth are met.

Because of the natural surface of the clay subsoil surface drains have been partially beneficial only. Moreover, during the warmer months the surface soil dries out quickly, and sets extremely hard. This condition, combined with the quick saturation of the soils, often results in a very short time in which the soil is in good cultural condition. The soil texture can be improved by liming, and the incorporation of stock droppings, increasing the humus content, but with comparatively virgin land, the period of good tillage conditions is often restricted to from six to eight weeks per annum.

METHOD OF CORRECTION.

During the past 15 to 18 years a large variety of crops, manurings, methods, and cultivations have been tried, and except where correction of soil by liming, combined with surface drainage, has been attempted, very little consistent results from crop growing has been secured. An exception of recent years has been the growing of subterranean clover with the aid of phosphatic manures.

THE NOTICEABLE EFFECTS OF LIME ON THE SOILS.

We have already shown that lime will sweeten the soil, and we are able to conclude that one ton of agricultural lime per acre will maintain the soil sweet or give a neutral reaction to litmus for at least five years.

Smaller applications of lime, made annually, give much slower results, and we find that the soil requires one ton per acre to put it in good condition to respond to the treatment. It is most noticeable that the naturalised clovers and grasses quickly establish themselves on the stubbles of limed areas, whereas they are slow to appear on plots dressed only with phosphate. Crops start earlier, grow more quickly, do not suffer so much from effects of over saturation, and yields have been much increased. The following table shows the results received from two-acre plot tests of wheaten hay during the last five seasons:—

Raw Rock Phosphates and Lime Tests on Wheaten Hay, 1919-1923.

Plot.	Manuring per Acre.	1919.			1920.			1921.			1922.			1923.			Means 1919-23.		
		T.	C.	L.	T.	C.	L.	T.	C.	L.	T.	C.	L.	T.	C.	L.	T.	C.	L.
1	No manure	0	10	84	0	9	0	0	18	84	0	7	21	0	8	14	0	10	85
2	5cwt. lime and 1cwt. super.	1	6	105	0	17	37	0	18	78	2	4	0	0	18	42	1	4	109
3	1cwt. super.	1	7	28	0	13	0	0	17	84	1	12	70	0	4	84	0	19	8
4	1cwt. aluminium rock phosphate	1	6	91	0	12	91	0	14	91	1	6	80	0	1	98	0	16	68
5	1cwt. calcium rock phosphate	1	3	7	0	11	9	0	12	21	1	1	60	0	2	28	0	14	1

These tests have been carried out on some of the poorest soil. The lime application being light, the soil is only just beginning to respond. However, the last two seasons' results are convincing, 1922 was a good average cereal season, and 1923 was a very poor one. The next few years should show a much greater benefit from the lime.

On our better soils heavier dressings of lime are applied periodically, and are giving very good results. During the last two seasons we have been able to grow payable crops of peas and turnips in the rotations, as well as cereals. However, liming the land is costly, and unless a district is ready for intensive rotational cultivation, an expense of £3 per acre on land valued up to £6 and £8 will not be readily incurred, especially as results from liming are not very apparent during the first season after application.

Of recent years much success has been obtained with subterranean clover as a grazing crop. It has been outstanding in its quick establishment on stubble land. A few pounds of seed sown with a cereal crop, the stubble of which has not been too heavily fed, has resulted in a really good pasture the subsequent season, provided sufficient phosphatic fertiliser has been applied. Ordinarily such stubble land would give but poor grazing the first year after cropping.

Subterranean clover makes a thick mat of growth of both foliage and roots during the autumn and winter months; the roots penetrate through the full depth of soil with a profuse mass of fibrous roots spreading throughout the soil and surface layers of clay. The plants make the bulk of their top growth during the spring and early summer months, sending out long runners, which seed profusely. Stock relish the clover in the dry as well as the green state. It is somewhat slower in establishing itself on land very badly infested with sorrel, but it will maintain itself against the weed, and numerous instances where the sorrel has been crowded out by this clover can be quoted.

Wimmera rye grass has persisted very well on this class of soil, and is the best grass to grow in admixture with the clover. A mixed pasture of 3lbs. clover and 4lbs. rye grass can be established at a cost of 21s. to 22s. per acre, plus the annual outlay of 5s. per acre for phosphatic fertiliser. One seeding, if thoroughly done, and the first year's grazing carefully handled, will be sufficient. Up till the present most of the older-established clover fields in the district have been dressed with superphosphate only. A wonderful increase in pasture growth has been secured, at a comparatively low cost, but the soil has not been sweetened. Recently, extensive tests have been commenced with the above-named pasture under different manurial treatments. Several brands of acid and citrate soluble phosphates are being tried in comparison with superphosphate, and superphosphate and lime, in both heavy and light dressings. Personally, I favor an initial application of 1cwt. water soluble superphosphate with the seeding of the pasture, and an application of 4cwts. high-grade rock phosphate at intervals of five years. This is in addition to the fertiliser applied with the crops that might be grown periodically in the fields to correct possible clover sickness.

At present, growing subterranean clover pastures in rotation with an oat crop once in four years, can be looked upon as the most economical means of farming this type of soil. By this system its stock-carrying capacity is being increased from three-quarters of a sheep to over three sheep per acre.

The question of soil acidity is the one that we are watching carefully, and any correction brought about by the continued good growth of the above-mentioned clover will be carefully looked for. Some hold the opinion that much goodness can be brought to the surface layers from the clay beneath. Mechanical means of bringing the clay to the surface would be costly, as also would correction by lime or gypsum, and it is feasible to expect that cheaper help will be secured in this respect from deep and well-rooting plants, such as subterranean clover.

ORCHARD NOTES FOR SOUTHERN DISTRICTS, APRIL, 1925

[By C. H. BEAUMONT, Orchard Instructor.]

This month will probably see the last of fruit harvesting. It is a mistake to allow fruit to hang on the tree after it is mature, the quality is affected very materially. It is much better to store it.

Windfalls should be cleaned up and removed or buried deeply; experiments have proved that fungous diseases are lessened by this procedure.

Apricot and peach trees may be pruned. It is essential that all dead wood should be cut clean out. The loss of big limbs shows a root trouble, probably caused by the tight packing of the soil; this may be remedied by the use of the subsoil plough or by explosives.

Have ground in readiness for planting; the land will, of course, be subsoiled, the deeper the better. Open up the holes and leave them open with the stake in position. Get the trees from the nursery as soon as they can be safely lifted. To get good trees it is necessary to use good wood and stocks from known heavy bearing, good quality trees. It will pay you to wait another year rather than use poor trees.

Clear away all fruit cases not wanted, and all spare timber; scald it all before packing it away. Trays finished with should also be scalded and packed.

Spray with fungicide all trees which have suffered severely.

See that ploughs and cultivators are in good order and ready for use.

If you intend to grow a cover crop, it should be in as early as possible. The fertility of the soil depends on its humus contents. Work up the headlands, do not fill them with cuttings and rubbish.

Young citrus trees will need some protection from the frost. This can be done to some extent by making a shield of a chaff bag or hessian stretched between two stakes, so as to shade the tree from the rising sun.

NARACOORTE AND KYBYBOLITE BRANCHES OF THE AGRICULTURAL BUREAU.

NINTH ANNUAL FARM COMPETITION.

[Judged by Mr. R. Wiese (Chairman, Mundalla Branch of the Agricultural Bureau)].

For the past nine years a series of farm competitions has been conducted by the Naracoorte and Kybybolite Branches of the Agricultural Bureau. The competitions are open to all persons farming or residing within the boundaries of the district council of Naracoorte. The 1924 competitions were controlled by a committee of management, consisting of Messrs. S. H. Schinckel, F. A. Holmes, J. Donoghue, E. S. Alcock (Naracoorte Branch), L. S. Davie (chairman), A. H. Bradley, S. Shepherd, H. B. Schinckel, and L. J. Cook (Hon. Secretary, Kybybolite Branch).

The competitions for the year 1924 were divided into 10 classes, as follows:—(1) Best worked and managed farm. (2) Most improved area of natural pasture on uncultivated land. (3) Best area of cultivated pasture. (4) Best growing crop wheat, East Naracoorte Range. (5) Best growing crop wheat, West Naracoorte Range. (6) Best growing crop oats, East Naracoorte Range. (7) Best growing crop oats, West Naracoorte Range. (8) Best flock of merino sheep on a farm. (9) Best-kept orchard and vegetable garden. (10) Best flower garden.

Classes 1 to 7 inclusive were judged by Mr. R. Wiese, of Mundalla, Class No. 8 was judged by Mr. A. H. Codrington (Wool Instructor of the School of Mines), and Classes 9 to 10 were judged by Mr. H. H. Orchard (Orchard Instructor for the South-East).

CLASS 1.—BEST WORKED AND MANAGED FARM.

The entries submitted in this class were judged according to a scale of points as follows:—

	Points.
1. System of cropping, including cultivation, rotations, manures, growing crops, summer crops, and fallow	100
2. Most profitable class of stock on farm, advantage being given to breeders (horses, sheep, cattle, pigs, and poultry)	100
3. Implements and machinery suitable for the farm	40
4. The general care of implements, harness, and farm equipment	25
5. System of boundary and divisional fencing, including gates, sheep, horse, and cattle yards	40
6. System for conveying surplus water from the farm land	15
7. The provision for fodders	40
8. Watering stock and water supply	40
9. Time and labor-saving appliances and methods	10
10. Arrangements of dwellings and outbuildings	25
11. Plan and upkeep of orchard, vegetable, and flower gardens, and other plantings for beautifying the homestead	20
12. Afforestation or shelter breaks	30
13. Experimental work of any kind conducted	15
14. Discretionary points allowed by judge	50

Total 550

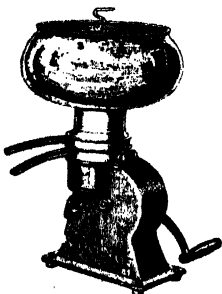
The judge (Mr. Wiese) allotted the following points:—

	E. L. L. Staude.	P. A. Laurie.	L. S. Davie.	Possible Points.
1. System of cropping	67	46	52	100
2. Livestock	62	79	64	100
3. Implements and machinery	36	15	25	40
4. General care of implements, &c.	20	18	12	25
5. Fencing, gates, stockyards, &c.	30	38	20	40
6. Drainage	5	5	5	15
7. Provision of fodders	15	30	10	40
8. Watering stock and water supply	35	25	20	40
9. Time and labor-saving appliances, &c.	8	5	3	10
10. Dwelling and Buildings arrangement	20	22	10	25
11. Orchard, garden; &c.	18	10	6	20
12. Afforestation	15	10	4	30
13. Experimental work	10	8	6	15
14. Discretionary points	40	25	20	50
Totals	381	336	257	550

Statement showing how points were allotted in this class.

Section 1.—The judging in this section was done according to the same scale of points as in previous years.

	E. L. L. Staude.	P. A. Laurie.	L. S. Davie.	Possible Points.
Cultivation	12	9	7	15
Rotation	15	10	15	25
Manuring	14	7	8	15
Growing crops	12	9	7	15
Summer crops	2	4	8	15
Other forage crops	12	8	7	15
Totals	67	46	52	100



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All these competitors grow crops. Mr. Staude's crops show careful cultivation and good selection of seed. Mr. Laurie has grown oats only. They are not so well grown as Mr. Staude's, and not so liberally manured. Mr. Davie's crop was relatively good, but care had not been taken in procuring pure seed. Mr. Davie and Mr. Staude are trying out a certain rotation. Mr. Laurie has apparently no definite system of cropping, but fallows before sowing. Mr. Davie is growing summer crops for his dairy herd. Mr. Laurie and Mr. Staude have small plots of lucerne. Mr. Staude has really good forage crops in the form of Subterranean clover and melilotus, while his competitors have not reached such an advanced stage along this line.

Section 2: Livestock.—The main line of livestock kept by all three competitors is sheep, which had previously been judged in the wool by Mr. Codrington, of the School of Mines. Mr. Davie has a very nice herd of milking cows. The stock has been judged in accordance with the following division of points:—

	E. L. L. Staude.	P. A. Laurie.	L. S. Davie.	Possible Points.
Horses	12	12	10	15
Sheep	33	35	31	45
Cattle	12	20	20	25
Pigs	—	8	—	10
Poultry	5	4	3	5
Totals	62	79	64	100

The livestock on all three farms was in good condition, Mr. Staude's horses being of a good type for his work, and the most even lot. Mr. Laurie does a little breeding. Mr. Davie also does a little breeding, and has some nice young stock coming along; but they are not yet up to the standard of the other lots. Mr. Laurie has some nice cattle, well cared for, and of good type. He is using a sire of the best Jersey blood. Mr. Staude keeps cows to supply the household principally. Mr. Davie has a very nice herd, mostly of grade Ayrshires, and is milking ten. He also breeds from the best sires. Mr. Davie's care for poultry leaves room for improvement. Mr. Laurie has a few fowls and ducks, which are apparently receiving good care. Mr. Staude has an exceptionally well-bred flock of Leghorn hens, which receive special care and attention.

Mr. Codrington comments as follows with reference to the sheep:—
“Mr. Laurie's flock may be considered on all points a good farmer's flock, and contains some ewes, which, if selected, and mated with suitable rams, could be used to build up a very good flock, which would assist it to become ultimately more profitable. The main weaknesses noticeable are lack of density of the fleece, substance, and robustness in the wool, but plenty of quality showed in the wool.

“In Mr. Staude's flock of 300 sheep a lack of uniformity of sheep, wool, and covering was very noticeable. The owner, I understand, has only recently devoted his attention to sheep, so has not yet

confined himself to definite nor systematic lines of breeding and production of a uniform type of sheep and wool.

To Mr. Davie's small flock of 180 sheep the same remarks apply as to Mr. Staude's."

Section 3: Suitability of Implements.—Mr. Staude has a good collection of suitable implements with which to work his farm, Mr. Laurie and Mr. Davie not being so well equipped.

Section 4: General Care of Implements.—Messrs. Laurie and Staude show great care in this division.

Section 5: Fencing Yards, &c.—Mr. Laurie's fences, yards, and gates reflect great credit on him. Every gate on this farm is of good strong type, well hung, and securely fastened. The fences which Mr. Staude has erected more recently for subdividing are good, but some of the older fences are not up to the same standard. Mr. Davie's care of fences leaves much to be desired.

Section 6: System of Drainage.—Very little has been done by any of the competitors.

Section 7: Provision of Fodders.—The only one who is carrying over any fodder is Mr. Laurie. He has some straw stacks, a good stack of hay, and has recently filled his chaff shed. None of the competitors is overstocked, and the fields carry an abundance of herbage. Mr. Davie's provision in this line is his summer fodders, and Mr. Staude relies chiefly on an abundance of Subterranean clover, and, of course, in all three cases on the assurance of their present crops for hay.

Section 8: Watering Stock and Water Supply.—All three water their stock principally from scoopholes. Messrs. Staude and Laurie have their homes and yards well supplied. Mr. Staude has shown thought in that he has made provision for filling his dams in several fields by putting down pipes from a bore at the house. He uses an engine for this purpose.

Section 9: Time and Labor-Saving Appliances.—None of the competitors had much to show in this line. They are all fairly well equipped with tools for doing various jobs on the farm. Mr. Staude has the most useful collection. Mr. Laurie showed a useful device for working his cow bails.

Section 10: Arrangement of Buildings.—Messrs. Laurie and Staude have their buildings very well arranged. Mr. Staude's are better arranged than Mr. Laurie's, but are not so well constructed. Mr. Davie falls behind in this division.

Section 11: Plan and Upkeep of Orchard, Garden, etc.—Mr. Staude has shown much thought in layout, and upkeep of his garden and orchard. He has been careful in the selection of a good variety of fruit and other trees. His selection of shrubs and plants of the flower garden is very good, and some choice varieties were seen. The garden is well sheltered, and the upkeep little to be improved. His vegetables were also good. Mr. Laurie's garden is not so well laid out, and has not received any special care. Mr. Davie's lot could have received more attention.

Section 12: Breakwinds and Afforestation.—Mr. Laurie has his house and sheds fairly well protected from winds, and has some nice young pines growing. Mr. Staude has his house, fowl run, and sheep yards well protected, and has planted pines with a definite system to afford protection to his yards and outbuildings. Mr. Davie has not done so much planting. All three farms are well supplied with shade trees in the fields for stock.

Section 13: Experimental Work.—Each of the competitors has done a little experimenting with manures and pasture improvement. Mr. Staude to a greater extent.

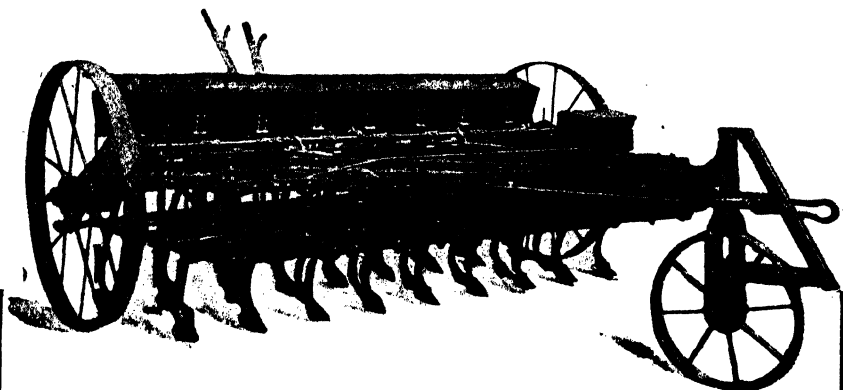
Section 14: Discretionary Points for Judge.—Points have been allotted to Mr. Staude for the generally neat and tidy appearance of his farm, and for the great improvement he has wrought in the stock-carrying capacity of his fields, the very definite plans he has in hand for the general improvement and building up of his farm, the general stability of construction of fences, sheep dip, yards, and buildings, and for the improvement made in the carrying capacity of portion of his holding; to Mr. Davie for improvement of pastures, and the noticeable attempt at carrying on a more mixed farming practice.

**CLASS 2.—MOST IMPROVED AREA OF NATURAL PASTURES ON
UNCULTIVATED LAND.**

	Quantity of Feed.	Type of Plants.	Quality of Feed.	Freedom from Useless Plants.	General Care.	Improvement to Pasture.	Area of Block.	Total.
Possible Points	30	15	10	5	5	25	10	100
Schinckel, H. B.	25	14	9	4	5	22	2	81
Bradley, A. H.	23	13	9	4	5	20	1	75
Laurie, P. A.	20	11	8	5	4	18	2	68
Wray, J. M.	15	10	8	3	5	23	1	65

1. *H. B. Schinckel, Kybybolite.*—The area of this plot is 6 acres. It has received liberal supplies of manure, one portion more than the other. The former has been manured at various times to the extent of 4cwts. per acre and the latter 3cwts. Where the heavier dressing has been applied a good clean pasture, consisting of a dense mass of Subterranean clover exists, while the remainder has Subterranean, Hop, Woolly, and Cluster clovers in abundance, wallaby grass, and except for a little sorrell, practically no useless weeds. Good shelter in the form of trees is provided for stock.

2. *A. H. Bradley, Kybybolite.*—This field of 4 acres has received 1cwt. superphosphate per acre every year from 1920-23 inclusive. This year it has had a bag of superphosphate per acre. Although this area has had nothing sown on it, quite two-thirds of it is well covered with Subterranean clover, the remainder with other clovers, dandelion, wallaby grass, and very few useless plants. Plenty of stock shelter.



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3. *P. A. Laurie, Kybybolite*.—This field of 10 acres has been top-dressed with 1cwt. super in 1923 and 1cwt. in 1924. It is a nice fresh pasture, although it has been well stocked. There is abundance of native clovers on the greater portion, while good patches of Subterranean clover were seen, with a lot of wallaby grass and dandelion. A clean field, well supplied with shade.

4. *J. M. Wray, Hynam*.—This small field of 2 acres received a dressing of 150lbs. 50 per cent. phosphate per acre last year, and the same again this year. Quite a nice variety of clovers, together with useful grass and a quantity of dandelion. Part of this field is low lying and wet, but there is a very great improvement, as compared with the land on the other side of the fence.

CLASS 3.—BEST AREA OF CULTIVATED PASTURE.

Possible Points	Quantity of Feed.	Type of Plants.	Quality of Feed.	Freedom from Useless Plants.	General Care.	Improvement to Natural Pasture.	Area.	Total.
	30	15	10	5	5	25	10	100
Shepherd, S.	29	14	8	4	5	24	10	94
Schinkel, E. C. H. . . .	28	14	8	4	5	24	7	90
Schinkel, E. C. H. . . .	27	12	9	3	5	23	10	89
Shepherd, S.	25	14	9	4	4	20	10	86
Bradley, A. H.	27	14	9	4	5	22	2	83
Staude, E. L. L.	28	14	8	3	5	23	1	82
Schinkel, H. B.	25	14	9	4	5	22	2	81
Wray, J. M.	23	11	8	3	4	23	9	81
Staude, E. L. L.	24	13	8	4	5	23	3	80
Staude, E. L. L.	23	12	9	4	5	22	3	78
Shepherd, S.	28	10	7	3	4	22	3	77
Schinkel, E. C. H. . . .	27	10	7	3	4	21	2	74
Staude, W. F.	22	14	9	4	4	18	3	74
Davie, L. S.	13	11	7	4	3	15	10	63

1. *Mr. S. Shepherd, Kybybolite*.—This field of 67 acres was sown with oats and $\frac{1}{2}$ lb. Subterranean clover seed in 1917, with 1cwt. superphosphate per acre. In 1920 wheat was sown with 1cwt. of super per acre. In 1923 and 1924 it was topdressed with 120lbs. 45 per cent. super per acre. This field has a very dense and thick coat of Subterranean clover of even growth; very few weeds were noticeable, only a few thistles and a little spear grass. Nicely provided with shelter trees, this was indeed a beautiful pasture, carrying a wealth of feed.

Mr. E. C. H. Schinkel, Kybybolite.—In 1923 this field of 35 acres was seeded with oats and 1 $\frac{1}{2}$ lbs. Subterranean clover seed, together with 187lbs. super per acre. In 1924, 1cwt. 45 per cent. super per acre was used for topdressing. Except for a little sorrel, a few thistles, and spear grass, the field was clean. The growth was a bit rank, but of very fresh appearance. Well supplied with shade trees, it was the equal of Mr. Shepherd's, except in quantity and area.

but a wealth of feed for the short time the field had been treated. Mr. Schinckel has every reason to feel proud of producing such wonderful pasture in such a short space of time.

3. *Mr. E. C. H. Schinckel, Kybybolite.*—This field of 47 acres was sown with wheat, Subterranean clover, and 1cwt. 36 per cent. super per acre in 1920. It again received 1cwt. super in 1923, and 150lbs. 50 per cent. phosphate in 1924. Though the pasture has been well stocked, it carried a grand mat of clover, a little thinner on the south end, where a good deal of spear grass and silver grass had not been crowded out. The quality of the feed was good.

4. *Mr. S. Shepherd, Kybybolite.*—This field of 107 acres had been heavily stocked throughout the winter with both sheep and cattle. It was sown with oats, and $\frac{1}{2}$ lb. clover seed in 1920, 1cwt. super being used. Oats were again sown in 1921. This year the field received one bag of 45 per cent. super per acre as a topdressing. A few wet patches were responsible for a slightly uneven appearance, but a great quantity of excellent feed remained. A very clean pasture well provided with shelter trees.

5. *Mr. A. H. Bradley, Kybybolite.*—This field of 6 acres was first seeded with Subterranean clover in 1911, and top dressed at various times since then with 1cwt. dressings of super per acre, until 1923, when it received 2cwts. per acre, and the same treatment this year. Although this field was a little thin on one corner, as compared with the rest of it, where a little sorrel was noticed, there was on this portion a good coat of Cluster clover. Heavily stocked throughout the winter, the growth was dense and of good quality.

6. *Mr. E. L. L. Staude, Kybybolite.*—This field of 4 acres was sown in 1922 with 1lb. clover seed in oat crop, 1cwt. 45 per cent. super being used. The two succeeding years 2cwts. 45 per cent. super per acre was used for topdressing. This field had not been stocked for some time, consequently the growth was rank, but very dense and thick. A good deal of spear grass was showing.

7. *Mr. H. B. Schinckel, Kybybolite.*—Sown with oats and Subterranean clover, using 1cwt. 36 per cent. super per acre, in 1920, topdressed with 1cwt. 45 per cent. super in 1923, and 2cwts. 45 per cent. this year. Mr. Schinckel's 6 acres carried a thick mass of Subterranean clover on most of the field, and a lot of cluster and woolly clover on the few thinner parts. Some spear and silver grass were the only comparatively useless plants.

8. *Mr. J. M. Wray, Hynam.*—Sown with Subterranean clover at the rate of 1lb. to the acre and 150lbs 50 per cent. phosphate per acre, on 45 acres of fallowed land in 1923, this field was topdressed in the autumn of this year with 50lbs. 45 per cent. and 100lbs. guano. Another 100lbs. per acre of super was applied in August. This field has been heavily stocked. A good dense mat of clover covered the majority of the area. This was a very uneven piece of land, and one side thinned off to an appreciable extent, where a good deal of spear and silver grass were in evidence. This field is indeed a wonderful improvement on the natural pasture.

9. *Mr. E. L. L. Staude, Kybybolite*.—This field of 12 acres has received the same treatment as Mr. Staude's previous exhibit. The growth was a bit uneven, thinning off on one side. The quality was very fair.

10. *Mr. E. L. L. Staude, Kybybolite*.—Another plot of 12 acres that had received similar treatment. This field was a bit patchy, caused by water lodging in hollow places, but contained a great quantity of excellent feed. It had been heavily stocked.

11. *Mr. S. Shepherd, Kybybolite*.—This field of 11 acres carried a very thick coat of Subterranean clover over the greater portion, together with a good quantity of Wimmera rye grass. It was not as good quality nor as clean as Mr. Shepherd's other exhibits.

12. *Mr. E. C. H. Schinckel, Kybybolite*.—Although no subterranean clover had ever been sown, this 9 acres carried a dense mass of that plant, together with a goodly quantity of Wimmera rye grass. The presence of so much spear grass, which is not a good grass, reduced the competitive value of this exhibit. It had been liberally treated with fertilisers.

13. *Mr. W. P. Staude, Hynam*.—Heavily stocked all the season, and still carrying eight sheep to the acre, Mr. Staude's pasture was a bit thin in patches, but on the whole carrying a great quantity of excellent clean Subterranean and other clovers.

14. *Mr. L. S. Davie, Kybybolite*.—This field had been previously sown with Subterranean clover in a cereal crop. It was not topdressed until this year with good results. A nice fresh pasture with a noticeable absence of useless weeds. Harrowing and further dressings of superphosphate will result in a really good pasture.

CLASS 4.—BEST GROWING CROP WHEAT (EAST NARACOORTE RANGE).

	Apparent Yield.	Trueness to Type.	Freedom from Disease.	Freedom from Weeds.	Evenness of Crop.	Total.
Possible Points.	60	10	10	15	5	100
1. Wardle, M. E. . . .	45	8	9	14	4	80
2. Watson, F. C. . . .	35	8	7	10	3	63
3. Staude, E. L. L. . . .	28	10	8	12	3	61

1. *Mr. M. E. Wardle, Naracoorte*.—15 acres Onas and 10 acres Zealand Blue wheats, sown on fallow at the rate of 65lbs. seed and 1 cwt. 45 per cent. super per acre. A very clean, well-headed crop, fairly true to type, and free from disease except for some "take all" in Zealand Blue. A little spear grass present. On the whole a very even crop, standing well.

2. *Mr. F. C. Watson, Hynam*.—30 acres Federation and 20 acres Major wheats sown on fallow at the rate of 60lbs. seed and 1 cwt. super per acre. A rather thin crop in patches, and uneven, but standing well. Federation contained other wheats. A good deal of "take all" and loose smut showing. Weeds were plentiful, but they were not those that would affect the sample of grain.

3. *Mr. E. L. L. Staude, Kybybolite*.—26 acres Leak's Rust Proof sown on fallow. Crop rather thin with very long straw, but standing

well. Quite true to type. "Take-all" in evidence. A few thistles and some drake present, otherwise very clean.

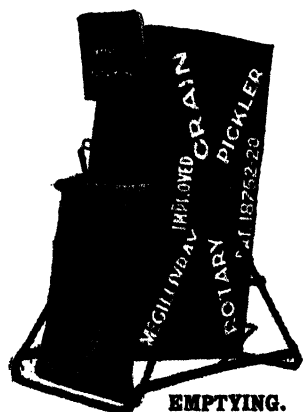
CLASS 5.—BEST GROWING CROP WHEAT (WEST NARACOORTE RANGE).

Possible Points.	Apparent Yield. 60	Trueness to Type. 10	Freedom from Disease. 10	Freedom from Weeds. 15	Evenness of Crop. 5	Total. 100
1. Gartner, J. G.	52	8	8	10	4	82
2. Tynam, W.	43	9	9	14	4	79
3. Donoghue, J. J.	42	9	7	12	3	73
4. Ricketts, G.	42	7	8	8	4	69
5. Wardle, M. E.	30	9	5	12	2	58
6. Williams, J. H.	30	9	6	10	2	57

1. *Mr. J. G. Gartner, Naracoorte.*—25 acres Federation wheat sown on fallow in the middle of June, at the rate of 70lbs. seed and 120lbs. 36 per cent. super per acre. Crop standing well, of even growth, with well filled heads, having indications of a good yield. Some foreign wheats present and a little barley in the plot, patches of "take all," and crop contained a lot of weeds, including cockspur, thistles, wild oats, and melilotus.

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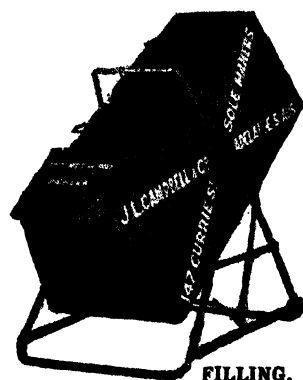
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2. *Mr. W. Tynam, Morambro.*—25 acres Major wheat sown on fallow at end of April at the rate of 60lbs. seed and 120lbs. 36 per cent. super per acre. A very clean crop, a little thin in places, straw nice length, but not really well headed. A few heads of Federation noticed in crop, and a little "take-all."

3. *Mr. J. J. Donoghue, Naracoorte.*—25 acres Federation wheat sown on fallow. Crop standing well and well headed. Thin patches and "take-all," causing unevenness and reducing yield. A few foreign heads present, and a quantity of thistles and wild oats.

4. *Mr. G. Ricketts, Morambro.*—20 acres Major and 5 acres Onas sown on stubble land at end of May. Crop standing well, but too weedy and uneven for heavy yield. Major contained foreign heads, patches of "take-all," and some loose smut. Weeds present included poppies, drake, wild oats, sheep weed, wild turnip, and others.

5. *Mr. M. E. Wardle, Naracoorte.*—40 acres Currawa and Federation sown on fallow. "Take-all" had spoilt what promised to be a good crop.

6. *Mr. J. H. Williams, Lochaber.*—50 acres Major wheat sown on fallow. Crop rather thin on greater part, and not well headed. "Take-all" bad, a little barley present, and various weeds.

CLASS 6.—BEST GROWING CROP OATS (EAST NARACOORTE RANGE).

Possible Points.	Apparent Yield.	Trueness to Type.	Freedom from Weeds.	Freedom from Disease.	Evenness of Crop.	Total.
	60	10	10	15	5	100
Moore, F. R.	54	10	9	11	4	88
Shepherd, S.	50	10	8	14	4	86
Wardle, M. E.	48	10	9	12	4	83
Staude, E. L. L.	47	10	8	13	3	81
Johnson, W. J.	42	10	7	14	3	76
Staude, W. F.	42	10	6	14	3	75
Laurie, P. A.	36	10	7	13	3	69
Davie, L. S.	36	10	8	9	3	66
Langeludecke, A.	38	10	8	6	3	65
Thompson, H.	30	10	9	12	3	64

1. *Mr. F. R. Moore, Kybybolite.*—Algerian oats sown on fallow. A thick heavily headed crop of even growth, but lodged in patches. True to type, and free from disease with the exception of a little "take-all." Some spear grass and drake were noticed.

2. *Mr. S. Shepherd, Kybybolite.*—Also Algerian oats sown on fallow. Rather long in straw, but very well headed, and standing well. Quite true to type, but contained few patches "take-all," and rust was noticed. Some thistles, otherwise very free from weeds.

3. *Mr. M. E. Wardle, Wild Dog Valley.*—Algerian oats sown on stubble. Nice clean crop, mostly of even growth and density, well headed, but thinning out around edges. True to type, with traces of rust, and barley was noticeable.

4. *Mr. E. L. L. Staude, Kybybolite*.—Algerian oats sown on fallow. Well-headed crop, but not even in growth, and lodging in patches. Rust in evidence, and drake noticeable in low-lying places.

5. *Mr. W. J. Johnson, Kybybolite*.—Crop not even in height or density, very thin in places, other parts tall and rank, and tending to lodge. "Take-all" and loose smut much in evidence, and some rust. Fairly free from weeds.

6. *Mr. W. F. Staude, Hynam*.—A well-headed crop, comparatively thin in places, other parts heavy and lodging. "Take-all", loose smut, and rust were noticed. Very free from injurious weeds, but some wheat heads present.

7. *Mr. P. A. Laurie, Kybybolite*.—A comparatively thin crop, not at all even, but standing perfectly. Contained a fair amount of "take-all," loose smut, and rust. Some thistles, and a bit of drake noticed.

8. *Mr. L. S. Davie, Kybybolite*.—Very uneven and thin on account of trees and wet places. Lodging heavier parts. "Take-all" and loose smut in evidence. Also badly infested with barley and a little drake.

9. *Mr. A. Langeludecke, Naracoorte*.—Heavy in places, and very thin in others. Rather weak straw. "Take-all" affected the crop. Weedy.

10. *Mr. H. Thompson, Wild Dog Valley*.—Short thin, uneven crop with weak straw. Loose smut present, also poppies and spear grass.

CLASS 7.—BEST GROWING CROP OATS (WEST NARACOORTE RANGE).

Possible Points.	Apparent Yield.	Trueness to Type.	Freedom from Disease.	Freedom from Weeds.	Evenness of Crop.	Total.
	60	10	10	15	5	100
Tynam, W.	55	10	10	14	4	93
Wardle, R. W.	46	9	9	10	3	77
Wardle, M. E.	40	8	10	12	3	73
Williams, J. H.	38	9	8	8	4	67

1. *Mr. W. Tynam, Morambro*.—Mortgage Lifter oats sown end April on fallow, at the rate of 60lbs. seed and 120lbs. 36 per cent. super per acre. A good crop of very even growth, well headed on straw of nice length. Inclined to lodge in few places. True to type, no trace of disease, and only few Scotch thistles present.

2. *Mr. R. W. Wardle, Naracoorte*.—Algerian oats sown on grass land. Well headed, but uneven, and rather thin in straw. A little "take-all" present. Also barley and spear grass.

3. *Mr. M. E. Wardle, Naracoorte*.—Also Algerian oats sown on grass land. Thin straw, not well headed. Crop generally too thin. Free from disease, but contained barley.

4. *Mr. J. H. Williams, Lochaber*.—Also Algerian oats on grass land. Crop standing well, but not of even growth, thin of straw, and not heavily headed. Fairly true to type, some "take-all" and loose smut, and also bad weeds present.

CLASS 9.—BEST KEPT ORCHARD AND VEGETABLE GARDEN.

Judged by Mr. H. H. Orchard, who allotted points and reported as follows:—

	General Layout.	Variety and Selection.	Freeness from Disease.	Cultivation.	Pruning.	Spraying.	Estimated Yield	Total.
Possible Points.	15	15	20	25	10	5	10	100
Staude, E. L. L.	12	14	15	18	8	4	4	75
Williams, J. H.	12	10	14	16	8	4	9	73

1. *Mr. E. L. L. Staude, Kybybolite*.—Mostly young trees not in bearing. Old trees out of alignment. Vegetable garden distinct from orchard. In an effort to cultivate close to the trees several have been barked—a bad fault, otherwise cultivation is good. Few young trees shaped rather high, and old year tree pruned too hard. Curl leaf is bad, and there are signs of aphid on the cherry. Trees and vines generally are very healthy. An excellent variety and selection of vegetables, and fruit trees are good. Probable yield from the bearing trees is somewhat disappointing.

2. *Mr. J. H. Williams, Lochaber*.—Potatoes amongst the trees as they are in this orchard is not recommended. Selection and variety is very limited in the vegetable garden. Shot hole and scab is bad on one apricot, aphid on Wickson plum and cherries, and anthracnose on vines. Cultivation is rough. Probable yield is very good.

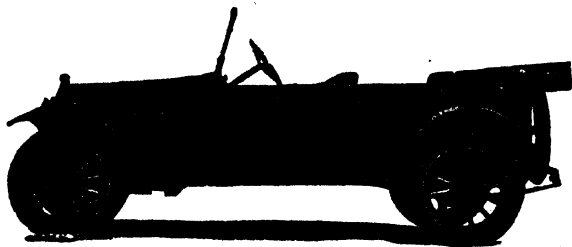
CLASS 10.—BEST FLOWER GARDEN (Pot Plants included).

	General Layout.	Care and Attention.	Variety and Selection.	Pot Plants.	Total.
Possible Points.	30	20	30	20	100
Williams, John	29	19	27	18	93
Gould, Miss A.	26	18	27	16	87
Staude, E. L. L.	28	20	28	5	81

1. *Mr. John Williams, Lochaber*.—White painted rose stakes with named labels attached very effective. Trace of mildew on a couple of roses.

2. *Miss A. Gould, Naracoorte*.—Shrubs planted in background will improve this garden in a year or so. Good display of pot plants, but hardly sufficient variety.

3. *Mr. E. L. L. Staude, Kybybolite*.—The general layout is good, but a few curved edges and fewer angles would be very effective. Group arrangement good, although in one bed the colors do not blend. A very good exhibit, but unfortunately there is a lack of pot plants.



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AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

CONFERENCE AT NARACOORTE.

Branches of the Agricultural Bureau situated in the south-eastern districts of the State met in Conference at Naracoorte on Wednesday, March 18th. Mr. C. Bray (President of the local Branch) presided over the gathering. The Department of Agriculture was represented by Mr. A. B. Feuerheerdt (member of the Advisory Board), Professor Arthur J. Perkins (Director of Agriculture), Messrs. W. J. Spafford (Chief Agricultural Instructor), P. H. Suter (Dairy Expert), A. H. Codrington (Wool Instructor of the School of Mines), and H. J. Finnis (Secretary Advisory Board of Agriculture). There was an excellent attendance of delegates from Mount Gambier, Penola, Naracoorte, Wirrega, Tatiara, Mundalla, Millicent, Kybybolite, Glencoe, Kalangadoo, and Lucindale Branches of the Bureau.

A pleasing feature of the Conference was the splendid display of produce exhibited by members of the various Branches.

Mr. A. B. Feuerheerdt (member of the Advisory Board of Agriculture, and formerly for many years a member of the Naracoorte Branch) opened the Conference. He referred to the work of the Advisory Board of Agriculture and its relationship with the men on the land. He urged them to avail themselves of the willingness of the Departmental Officers to assist them to further the development of agriculture. He congratulated the producers on the good season they had just gone through and on the prospects of the season before them. Much had been heard of top dressing and subterranean clover, and the sooner the landholders took it up the better it would be, not only for the individual, but for the State. There was now no question of its being remunerative, and the outstanding advantage was that it would improve the grazing capacity of the land that was now regarded as inferior, especially the light lands. He congratulated them on the success that had attended the recent farm competitions. Friendly rivalry was created by the competitions, and that was one of the best incentives for improving farms. The Government Farm at Kybybolite was a splendid institution, and he trusted they would make a point of watching the progress of the work conducted there. He hoped that the Conference would be a successful one, and that all would leave feeling that some useful knowledge had been gained.

HANDFEEDING SHEEP.

Mr. F. Kidman, in the course of a paper, "The Value of Hand-feeding Sheep. Assisted by Growing Kale," expressed the opinion that grain was the best form of fodder on which to handfeed sheep. Half a pound of oats or barley per sheep per day would keep each animal in good condition. A small field of kale would prove of great assistance. If a plot were sown with 2lbs. of thousand-headed kale, with lewt. of super to the acre, during September, the crop would be ready for grazing about 10 weeks after sowing. Ten weeks after

planting a seven-acre paddock with kale he had turned 70 wethers on the crop. On January 20th he grazed 140 wethers on the kale for a month, and during the lambing season, the ewes, in addition to being hand fed, were also grazed on the kale. The crop at the present time was still in good heart, and should give additional winter feed for the ewes. The plot of seven acres carried an average of 10 sheep to the acre for 12 months.

Mr. E. Dow (Lucindale) suggested that in order to induce the sheep to take to handfeeding, sheaves of hay should be placed close to and over the trough. They would then eat the hay and take to the chaff and grain without any trouble. Mr. A. Sassanowsky (Mount Gambier) said farmers had come to the conclusion that for handfeeding, grain was more satisfactory than chaff. All that was necessary was to sprinkle grain on the ground. No feeders had to be erected, no troughs were required, and the wind did not blow the grain away. When handfeeding ewes from a trough there was always a danger of the mother leaving the lambs, but if there was a paddock of kale available that was not likely to happen. The Director of Agriculture (Professor A. J. Perkins) said it was pleasing to learn that farmers had now accepted handfeeding as a practical proposition, and he was pleased to see that Mr. Kidman advocated commencing handfeeding before the pastures and grazing had given out. Kale was a crop better adapted to South-Eastern conditions than many other crops that were sometimes grown. In reply to a question from Mr. R. Howard (Penola), regarding the feeding value of field peas as compared with oats, Professor Perkins said peas were a richer feed than oats, and there was no reason why they should not be used. He thought, however, that relatively to cost, oats should prove cheaper. If peas were low in price they would, no doubt, go further than oats, always on the assumption that the grain would not be fed alone, but supplemented with roughage. Generally speaking, as prices reigned, oats would be the more economical feed. Mr. H. Buck (Mount Gambier) said he had grown peas, but the crop had been greatly troubled with grubs.

HAYMAKING.

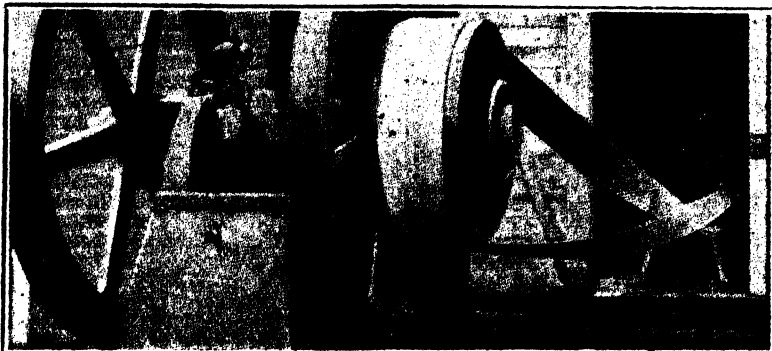
Mr. H. G. Fisher, who read a paper, "Haymaking," held the opinion that oaten chaff was the best form of fodder for stock for economical feeding. Wheaten hay should be cut a few days after the flowers had fallen, whilst the binder should be put into the oat crop when the straw was of a purple color, and when the grain had just left the milky stage. After having been in the paddock for eight or nine days, the hay should be carted to the stack. For a foundation for the stack, Mr. Fisher preferred straw: timber permitted mice to get into the hay. A stack 14yds. in length by 6yds. in width should weigh about 50 tons. The stack should be made to swell out near the eaves, so that when the hay settled down the weight of the sheaves would press on the outside sheaves, and so provide better protection from rain. For binding the sheaves he preferred stacking the heads facing outwards. The eaves should project about 4in. over the walls of the stack. After the stack had been allowed to settle, it should be finally thatched with sheaves of straw cut with the binder.

Mr. A. Ferguson (Glencoe) suggested that the stack should be built with high walls to get as much pressure as possible, so that mice would be kept out of the main portion of the stack. Mr. Fisher said that the erection of mouse-proof staging would also assist in guarding the hay against mice.

SUBTERRANEAN CLOVER.

Mr. R. Howard (Penola), who read a paper dealing with "Subterranean Clover," said that variety of clover was proving to be one of the most valuable grazing crops ever introduced into Australia. After describing the habits of growth of the clover, Mr. Howard said that once the seed had been sown on cultivated land or permanent grass pastures, the crop would remain there for all time without resowing. In addition to being such a valuable fodder plant, subterranean clover absorbed nitrogen from the air, thereby adding and enriching the soil with that valuable constituent. Mr. Howard mentioned that the paper he had read had been compiled by his father, Mr. A. Howard, of Blakiston, in 1912.

Mr. G. Buck (Mount Gambier) said he had 370 acres sown with subterranean clover, and during last lambing season it carried 11 sheep to the acre. There was no other grass or fodder plant in Australia that would stand so much feeding. Mr. A. Sassanowsky (Mount Gambier) said it was going to prove most useful to the South-East. It would not only stand very heavy stocking, but it also had the advantage of being able to crowd out undesirable weeds. Much of the publicity that had been given subterranean clover was due to the experiments that had been carried out at the Kybybolite Farm. The plant was being widely spread throughout the South-East, and thousands of acres of poor land would ultimately be sown with the clover. Mr. M. J. Wray (Naracoorte) had seen subterranean clover growing on bracken fern country, land that prior to sowing with clover was not worth a "tap." The clover had also crowded out such weeds as star thistles, wild oats, and wild asters. Mr. S. J. Bonney (Glencoe) said if farmers could manage to grow pasture plants amongst the ferns, the stock would kill the ferns. Mr. E. Dow (Lucindale) bore out the remarks of a previous speaker regarding clover killing star thistles. Mr. R. Campbell (Tantanoola) stated that the prime factor of the success of subterranean clover was the application of phosphatic fertilisers. Mr. T. Marcus (Penola) said the only type of soil on which the clover did not seem to thrive was the heavy black plain country. Mr. F. Kidman (Penola) had had wonderful success with the clover, and his opinion was that it would be the making of the South-East. Mr. L. S. Davie (Kybybolite) said subterranean clover had been grown at Kybybolite for a good number of years, but until it was top dressed with phosphatic manures it never gave remunerative results. In the spring of the year one could see hundreds of acres, with an appearance similar to that of irrigated lucerne. For the first year it was advisable to keep stock off the clover, but after that he firmly believed that stock would never eat it out.



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Mr. W. J. Spafford (Chief Agricultural Instructor) said it could not be doubted that subterranean clover was a wonderful plant, and all credit was due to Mr. A. W. Howard, of Mount Barker, for his persistent efforts in endeavoring to bring the plant before the public. One of its main advantages was its possibilities of revolutionising agriculture in districts of good rainfall and poor soils. In some districts it had raised the value of land by £3 per acre. So far, the only soils on which the clover would not thrive were heavy black soils and crab-hole country. In those soils, however, King Island Melilot grew very well. The best pasture that he had ever seen was at Ashbourne, where subterranean clover was sown in conjunction with perennial rye grass. Subterranean clover was not an early fodder, except possibly in well-drained and comparatively dry areas. The time of seeding was of utmost importance.

Mr. R. Campbell (Tantanoola) read a paper, "Co-operative Shearing Shed and Marketing of Wool."

RESOLUTIONS.

During the session devoted to Free Parliament, the following resolutions were carried:—Mr. H. G. Fisher (Tatiara) moved—"That in view of the apparent deterioration of exported Australian wheat, it is desirable that a system of grading be adopted by the Government, and that producers be paid according to grade of wheats." Mr. A. Sassanowsky (Mount Gambier) seconded, and the motion was carried. The Conference accepted the invitation of the Penola Branch to hold the 1926 Conference at that town. Mr. T. Marcus (Penola) moved—"That the price of cornsacks be published in the *Journal of Agriculture*." The motion was seconded by Mr. A. J. Bethune (Penola), and carried. Mr. T. Marcus (Penola) also moved—"That the prices of all overseas produce be published in the *Journal of Agriculture*." Mr. H. Fisher (Tatiara) seconded, and the motion was carried.

BARLEY.

After the tea adjournment, Professor Perkins mentioned that many farmers who had barley for sale were concerned because their grain was rejected by maltsters. He had recently received a letter from a reputable firm of maltsters, in which it was stated that what ought to be a good sample of barley was often spoiled by thrashing, and that the whole of the difficulty arose from defects in harvesting. A percentage of grains was damaged, and rendered the bulk of the grain useless from a maltster's point of view. In the process of malting, it was the practice to stimulate the grain to natural growth until a certain point was reached, when further germination was destroyed by heating the growing barley on drying kilns. That process had the effect of producing those flavors in malt which were so desired. In order to stimulate the barley into growth, they had to wet the grain in cisterns, and it was obvious that skinned barley would take up water more quickly than whole barley, because the water had greater access to the interior of the grain. In practice, that meant that germination of a skinned or partially skinned sample became very

irregular, and a proportion of the grain would take up so much water that its vitality was destroyed, just as it would be in a water-logged paddock. One of the effects of that was to give a sample of malt which should have every grain friable and powdery, with a proportion of the original barley remaining in it, and that, after drying, became hard, and reduced the value of the malt sample. Not only that, but a sodden grain or lifeless barley which had a broken skin had no resisting power to the many forms of mould spores which were found on the surface of the barley and in the water and air with which it was in contact. Those mould growths attacked the starchy body of the grain, and were never eliminated, causing not only a poor appearance in the resulting malt sample, but, in spite of everyone's efforts, that mould gave rise to flavors which were so undesirable as to be the exact opposite of the ones they endeavored to obtain.

RECLAIMING BRACKEN LAND.

In response to a question as to the best means of reclaiming the bracken soils of the South-East, the Chief Agricultural Instructor (Mr. W. J. Spafford) gave it as his opinion that the best plan to adopt if they wanted to tackle the bracken land was to plough the bracken after firing it in the summer, seeding it to subterranean clover, and topdress it regularly with potassic as well as phosphatic manures. Mr. W. Rogers (Naracoorte) said on small areas pigs would

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keep ferns under control. Mr. A. B. Feuerheerdt (member of the Advisory Board of Agriculture) said the bracken fern country could be turned to profitable account if planted with wattles. He had 3,000 acres of wattle which had been set out at a cost of 1s. 6d. per acre. The bracken fern land should be used for afforestation on a larger scale than was the practice at the present time.

The Director of Agriculture then presented prizes to some of the successful competitors in the recent Naracoorte and Kybybolite Farm Competitions.

CONFERENCE AT CLARE.

On Thursday, March 5th, representatives of the Clare, Saddleworth, Riverton, Tarlee, Williamstown, Williamstown Women, Lyndoch, Light's Pass, Saddleworth Women, Two Wells, and Black Springs Branches of the Agricultural Bureau met at Clare on the occasion of the Annual Conference of Mid-Northern Branches. Mr. J. W. Hamlyn, chairman of the Clare Branch, presided, and the platform was occupied by Messrs. W. S. Kelly, H. Wicks, F. Coleman, A. B. Feuerheerdt (members of the Advisory Board of Agriculture), W. J. Spafford (Chief Agricultural Instructor), P. H. Suter (Government Dairy Expert), D. F. Laurie (Government Poultry Expert), J. B. Harris (Orchard Instructor for the Northern District), and H. J. Finnis (Secretary of the Advisory Board of Agriculture).

OPENING ADDRESS.

In an opening address Mr. W. S. Kelly dealt with rotation of cropping, and the possibility of pea growing in conjunction with wheat in that district. Peas, he said, could be grown either before or after wheat, and the wheat would be as satisfactory after peas as after bare fallow. One crop every other year was not a sufficient return for the money invested, and with the object of increasing that income, and incidentally of adding humus to the soil and building up its fertility, he advocated planting peas. Mr. Kelly also stressed the importance of pasture improvement.

PRESERVING FRUIT AND VEGETABLES.

Mrs. E. Catford of the Riverton Branch contributed a paper in which she described methods of preserving fruit and vegetables. One important point, she said, was to select sound, ripe fruit. It should be packed in dry glass bottles with screw tops, and filled with syrup made by boiling 3 cups of water and 2 cups of sugar together for 20 minutes. This should be allowed to stand until quite cold, and then poured into the bottles of fruit. A cloth should then be placed in a preserving pan, the bottles placed on this, and water poured into the pan until the bottles were three parts covered. The water should then be brought to a boil, and the boiling continued until the fruit was quite soft. The lids should be placed upside down on the bottles to keep the heat in. When the fruit was cooked, the bottles should be taken out, the rubber band put on, and the tops screwed down.

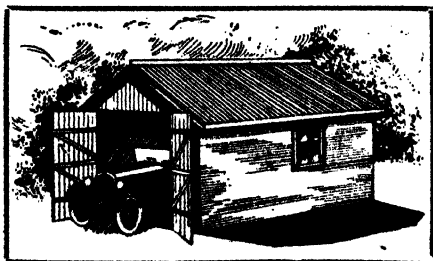
with a suitable wrench. Care should be taken to ensure that there were no air bubbles left in the bottles, and that they did not leak.

Fruit and vegetables could also be preserved in cold water without the use of sugar or heating. The method was as follows:—Place the bottles of fruit in any large vessel that would hold 4in. or 5in. of water above the top of the bottles, let the water tap run into each bottle with some force to pack the fruit and wash out any impurities, then allow the bottle to stand for about five minutes until the air bubbles have ceased to rise, seal the bottles under the water, wipe dry, and stand upside down. The most important factor was to get the air out of the bottle, and keep it out. During the discussion which followed, Mr. W. H. Lewcock (Clare) suggested dipping the bottles into a small pan of wax to make doubly sure that they were airtight.

The afternoon session was commenced by an address by Mr. H. W. Moss (Clare Branch) on "The Value of Fertilisers," which was followed by Free Parliament, during the course of which a number of questions were asked and answered by the experts.

AUTUMN SPRAY FOR BLACK SPOT.

Mr. R. Knappstein asked if spraying in the autumn would help to control fusieladium or black spot of apples and pears, and, if so, what class of spray should be used. Mr. Geo. Quinn (Horticultural Instructor) replied that that disease usually broke into renewed activity in the autumn if rain fell before the leaves dropped. It then chiefly attacked the leaves, and gave rise to countless spores. Whether those spores rested about the tree or in the soil was a matter of dispute, but they undoubtedly increased the chances of a strong start being made by the fungus during the next season. At the Blackwood Experimental Orchard they were only troubled with the disease during recent years, and he intended spraying the apple and pear trees just as the leaves were falling to test the matter. They had sprayed the stone fruits with Burgundy mixture in the autumn season for a number of years past, and the shothole fungi were lessened much more than when spring spraying was alone given. He had found that autumn spraying would go a long way to repress curl leaf on the peach trees when they burst into leaf in the following spring.



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POWDER DUSTING.

In reply to the question, "Is there any other and more effective method of controlling orchard pests and diseases than liquid spraying," Mr. Geo. Quinn said that powder had been tried extensively by growers and experiment stations in the United States. Special "powder guns" operated by motor power had been devised and used. It should not be forgotten that the reagents used, such as arsenate of lead, calcium arsenate, and lime sulphur were much cheaper in America than here, and the waste of material was not such a serious matter with them. Later publications issued by the experimental stations did not give any particular advantage to the powder dusting over the liquid sprays, in fact, they seemed to lean towards the latter.

RESOLUTIONS.

Resolutions were carried to the effect that (1) "The Advisory Board of Agriculture be asked to make the necessary arrangements for the holding of a rural household science course in Adelaide during the coming year." (2) "That the Federal Government should increase the duty on imported dates." (3) "That the Government be asked to compel all landholders to destroy foxes, and that the destruction of such be under the supervision of the Minister of Crown Lands, that a simultaneous destruction be enforced during February, March, and April, and that the Government be asked to deal with Crown lands, water reserves, forest reserves, &c." (4) "That the Federal Government should prohibit the introduction of cornsacks below standard." (5) "That the Department should conduct a tractor trial on similar lines to that carried out on the Turretfield farm a few years ago." (6) "That the Advisory Board be asked to institute investigations with a view to determining, if possible, the cause and cure of buck currants."

MID-NORTHERN AGRICULTURAL PRACTICES.

During the evening session the Conference was addressed by the Chief Agricultural Instructor (Mr. W. J. Spafford). During his inspection of the crops in that district he had noticed a few matters to which he directed their attention, namely, the practice of sowing unsuitable wheats on large areas, the presence of rust, stinking smut, and bad weeds in the crops, and neglect of the fact that they had more than one class of land on their holding. He enlarged on these factors, and also contended that not nearly enough livestock were carried on the majority of farms in that district. Mr. Spafford finally dealt with a number of rotation of crop experiments which had been conducted at the Booborowie Experimental Farm in conditions very similar to those of much of the country under review.

The Chairman of the Advisory Board (Mr. W. S. Kelly) presented the trophies won in the first annual Wheat Crop Competition of the Midlands District. The prizewinners were:—Mr. L. W. Frost (Saddleworth) first (silver cup), Mr. A. L. Frost (Riverton) second prize (a silver coffee pot), and Mr. H. P. Wardle (Black Springs) third prize (silver cream jug).

It was decided that the next Conference be held at Balaklava.

ADVISORY BOARD OF AGRICULTURE

The monthly meeting of the Advisory Board of Agriculture was held on Wednesday, March 11th, there being present:—Mr. W. S. Kelly (Chairman), Capt. S. A. White (Vice-Chairman), Messrs. F. Coleman, J. W. Sandford, A. M. Dawkins, C. J. Tuckwell, P. H. Jones, L. Cowan, B.Sc. Agric., W. J. Colebatch, B.Sc. Agric., M.R.C.V.S., A. B. Feuerheerdt, and the Secretary (Mr. H. J. Finnis).

Apologies were received from Professor A. J. Perkins, Colonel Rowell, Messrs. H. Taylor and A. Julius.

Appointment of New Member.—Information was received from the Honorable the Minister of Agriculture that Dr. A. E. V. Richardson, Director of the "Urrbrae" Agricultural Research Station, had been appointed a member of the Advisory Board of Agriculture.

Assistant Farm Manager, Eyre Peninsula.—It was decided that the suggestion of the Eyre Peninsula Conference, that an assistant manager should be appointed at the Eyre Peninsula Experimental Farm should be held over for 12 months.

Experimental Orchard for Light's Pass.—In commenting on the resolution carried by the Light's Pass Agricultural Bureau, that a Government Experimental Orchard and Vineyard should be established in that district, the Director of Agriculture said there was nothing to be gained in multiplying orchards and vineyards, apart from those cases where exceptional conditions obtained. The present instance did not appear to warrant the establishment of a new experimental orchard. The Secretary was instructed to advise the Branch accordingly.

Tuberculosis in Milk and Cream.—A memorandum by the Assistant Dairy Expert (Mr. H. J. Apps), dealing with the control of tuberculosis in milk and cream, was read.

New South Wales Agricultural Bureau Conference.—A communication was received from the Secretary of the Advisory Council of the New South Wales Agricultural Bureau, extending an invitation to members of the Advisory Board to attend the Third Annual Conference, which was to be held at Hawkesbury on July 21st. The Secretary was instructed to thank the New South Wales Council for their kind invitation.

Fruit Pool.—A resolution was received from the Blackwood Branch, expressing appreciation of the action of the Government in coming to the aid of fruitgrowers by supporting a fruit pool. It was decided to bring the resolution under the notice of the Government.

Experimental Farm on Kangaroo Island.—The recent Conference of Branches of the Agricultural Bureau on Kangaroo Island resolved, "That the Department of Agriculture should be allowed a sufficient sum of money to enable operations to be undertaken on the area of land set aside for experimental purposes in the Hundred of MacGillivray. It was decided to ask the Director of Agriculture to report on this matter.

Rural Household Science Course.—The following resolution, carried at the Lower Northern Conference recently held at Clare:—

"That the Advisory Board be asked to make the necessary arrangements for the holding of a Rural Household Science Course in Adelaide during the coming year," was discussed. It was decided to ask the Government to sanction the course, as already outlined, but as the Government had already deferred action owing to the financial stringency, the Board decided to suggest that persons attending the course should pay their own fares to and from Adelaide, thus reducing the expenditure on the scheme.

Foxes.—The Lower Northern Conference resolved—"That the Government be asked to compel all landholders to destroy foxes, and that the destruction of such be under the supervision of the Minister of Crown Lands; that simultaneous destruction be enforced during February, March, and April; and that the Government be asked to deal with all Crown lands, water reserves, forest reserves, &c." The Secretary was instructed to circularize Branches of the Bureau, asking Branches to join in the attempt to destroy foxes by poisoning during the latter end of March and early in April. Mr. Colebatch (Principal of the Roseworthy Agricultural College) stated that some years ago they had been compelled to erect enclosures in the paddocks for yarding the sheep at night on account of the numerous foxes, but, by a systematic and persistent distribution of baits, the fox menace had been practically overcome. Mr. A. M. Dawkins stated that he had made a practice of poisoning every year, and he believed that if every farmer and landowner could be induced to adopt the same practice, much would be done to keep the foxes under control. Mr. A. B. Feuerheerdts agreed with Mr. Dawkins, and stated that by commencing poisoning a little ahead of the lambing season, and persisting with the distribution of poisoned baits, large numbers of foxes could be destroyed. He had adopted that practice for 14 years in the South-East, and had had an average lambing of 83 per cent.

Inferior Cornsacks.—The Lower Northern Conference had resolved—"That steps be taken by the Federal Government to prohibit the introduction of cornsacks below standard." The Secretary reported that this matter had been brought under the notice of the Customs Department, who stated that steps had been taken to give effect to the requirements of the law.

Tractor Trial.—A Lower Northern Conference resolution, "That this Conference recommends the Department to conduct a tractor trial on similar lines to that carried out at Turretfield Farm a few years ago," was referred to the Director of Agriculture, asking for a report on the request.

Buck Currants.—The Mid-Northern Conference resolved—"That this Conference recommends that the Advisory Board be asked to institute investigations with a view to determining, if possible, the cause and cure of buck currants." The Secretary was instructed to refer the resolution to the Horticultural Instructor for a report.

Life Members.—The following names were added to the roll of Life Members of the Agricultural Bureau:—Mr. A. Beviss, Balhannah. Messrs A. Sassanowsky and R. Smith, Mount Gambier. Mr. W. H. Gale, Salt Creek. Mr. E. J. Kitto, Morehard.

New Branch.—The formation of a Branch of the Agricultural Bureau at Kapunda was approved, with the following gentlemen as foundation members:—Messrs. Hazel, A. Lewis, R. Shannon, M. Muirhead, J. and F. Nicholls, J. Kildea, C. Murray, G. Ryan, G. Butler, S. Wills, W. Will, W. Tylor, W. Scales, T. Schapel, S. Shakeshaft, D. French, L. Bettison, S. March, N. Tillbrook, E. Ludwig.

New Members.—The following names were added to the rolls of existing Branches:—Balhannah—F. Moulden, F. S. Meyers, C. Grasby, W. Clarke; Brinkworth—E. W. Dempster, R. S. Booth; Alma—D. M. McKenzie, E. A. Simon; Finnis—A. Buzacott, H. Volles; Glossop—S. Phillips; Berri—S. E. Randell, J. Fernie, A. Wishart, L. Pennyfield; Penola—J. W. O'Connor, R. Howard; Orroroo—S. Wakeford; Tatiara—Geo. Chambers; Rosedale—H. Mugge, R. A. Warner, P. Balmer; Mount Barker—H. Springbett; Beetaloo Valley—V. Voce, G. Parkyn; Clanfield—W. Backmann, G. Peircey, S. Pavy, W. Fletcher; Wirrabara—E. Woolford; Lone Pine—A. Milde; Coomandook—W. T. LeGalley, J. R. Chapman, H. Chapman, J. Chapman, A. Wilkinson, A. Martin, A. L. Brown, H. Bartlett; Rapid Bay—A. G. Beiner; Wynarka—G. K. Waterhouse, J. Pearce; Barmora—G. Jones, S. W. J. Comley, J. B. Anderson, W. F. Hubert; Port Elliot—C. M. Ives, Henry E. Welch; Narridy—R. Darley, R. Nicholson; Saddleworth Women's—Mrs. F. J. McLeod, Mrs. C. H. Rex, Mrs. F. Warnecke, Miss D. Coleman, Miss V. Rex; Tweedvale—G. Hartwig, E. F. Klose, F. Swaine, R. Lorke; Moonta—R. Ferguson, J. Ferguson, E. W. Lennan.

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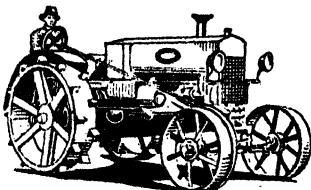
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RESULTS OF BUTTERFAT TESTS FOR FEBRUARY, 1925.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during February.	Per Cow during February.	Per Cow August to February.	Per Herd during February.	Per Cow during February.	Per Cow August to February.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
2/K	25-14	22-61	15,607	658-96	4,191-43	626-32	26-54	174-47
2/L	22-96	19-86	9,823	427-83	3,879-45	446-30	19-44	172-44
2/Y	14-18	13-07	7,071-5	498-69	5,309-92	281-13	19-83	214-41
2/Dd	18-54	18-54	8,453	455-93	5,680-61	343-12	18-51	241-81
2/Ee	15	14	7,280	485-33	5,061-33	331-10	22-08	223-79
2/Ff	11	11	6,048	549-82	6,071-97	259-52	23-59	252-12
2/Gg	12	8-39	4,071-5	339-29	4,043-24	184-61	15-38	167-28
2/Hh	9-79	9-18	4,043	412-97	5,256-64	166-99	17-06	207-22
2/Ii	11	10	4,284	389-45	5,258-67	184-03	16-73	226-94
2/Jj	28	16-96	7,545	269-46	3,181-84	312-08	11-17	122-91
Mens	16-76	14-36	7,422-60	442-85	4,493-15	313-59	18-71	187-10

MILANG HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR JANUARY, 1925.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during January.	Per Cow during January.	Per Cow May to January.	Per Herd during January.	Per Cow during January.	Per Cow May to January.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
4/A	26	10-87	3,047	117-19	3,896-40	152-03	5-85	170-86
4/B	38	24-55	8,768-5	230-77	3,838-52	395-08	10-40	152-99
4/C	29	20-52	10,268	354-07	3,522-66	448-04	15-45	145-12
4/D	21-32	15-13	6,725	315-43	6,417-83	284-19	13-33	247-64
4/E	21	10-97	2,322	110-57	3,633-68	102-64	4-89	140-00
4/F	20	12-74	6,934-5	346-72	3,571-93	314-98	1-74	154-28
4/G	27	21-77	8,674	321-26	3,480-77	381-44	14-13	138-81
4/H	31-42	27-74	12,105-5	385-28	4,287-44	514-79	16-38	177-13
4/I	32-35	29-03	12,701-5	392-63	3,868-36	635-15	19-63	172-42
4/J	52-23	42-77	25,432-5	486-93	4,154-92	1,035-17	19-82	157-70
4/K	16	15-03	6,983	431-19	3,754-09	319-32	19-72	166-19
4/L	33-06	25-61	13,719-5	414-98	3,507-84	667-28	20-18	166-25
4/M	23	16-03	6,151-5	267-46	3,628-14	265-55	11-55	144-46
4/N	41	27-29	8,161	199-05	5,397-02	344-70	8-41	220-46
4/O	43	33-81	8,089-5	188-13	5,462-35	363-82	8-46	224-39
4/P	64	47-42	9,479	148-11	2,410-35	394-08	6-16	93-65
4/Q	51	39-58	32,181	631-00	4,112-42	1,279-09	25-08	163-16
4/R	16	15	7,300-5	456-28	4,746-68	353-32	22-08	219-30
Mens	32-52	24-21	10,502-42	322-04	4,038-03	458-37	14-09	165-46

NARRUNG HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR JANUARY, 1925.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during January.	Per Cow during January.	Per Cow October to January.	Per Herd during January.	Per Cow during January.	Per Cow October to January.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
5/A	78-13	67-32	25,717-5	327-29	1,467-17	1,218-74	15-51	68-87
5/B	30-45	24-48	14,708	483-02	2,186-72	720-22	23-65	108-60
5/C	18-97	18-61	9,251-5	487-69	2,706-47	453-81	23-92	124-56
5/D	40-42	19-39	6,897-5	170-64	1,331-33	388-29	9-61	69-47
5/E	55-42	39-65	16,948-5	305-82	1,938-24	831-85	15-01	90-86
5/F	27	27	16,864	624-59	2,786-38	744-08	27-56	121-20
5/G	23	22-06	9,701-5	421-80	2,192-50	476-22	20-71	100-66
5/H	39-94	31-28	10,563	264-47	1,254-76	589-67	14-76	67-48
5/I	36-77	25-10	9,540-5	259-46	1,803-98	462-32	12-57	81-53
5/J	42-32	18-81	8,712	205-86	1,386-21	395-79	9-35	65-42
5/K	48	18-42	10,470	218-12	1,654-22	512-54	10-68	77-25
5/L	35	31-32	8,274	236-43	1,818-88	454-12	12-97	83-88
5/M	23	19-06	6,364	276-70	1,717-24	301-40	13-10	80-79
5/N	31-32	30-29	16,842-5	537-75	2,568-12	788-51	25-18	115-95
5/O	41-16	36-45	17,776-5	431-89	1,937-19	791-05	19-22	85-06
5/P	35	27-35	10,363	296-09	1,867-74	508-82	14-54	90-71
5/Q	28-26	23-65	12,870	455-41	1,994-73	658-25	23-29	99-79
5/R	84-65	64-48	25,123-5	296-79	1,209-22	1,187-52	14-03	55-72
5/S	36	28-52	11,460-5	318-35	1,200-13	569-72	15-83	56-17
Means	39-73	30-17	13,076-26	329-15	1,752-34	634-36	15-97	82-42

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GLENCOE HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR JANUARY, 1925.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.		Butterfat			
			Per Herd during January.	Per Cow during January.	Per Cow October to January.	Per Herd during January.	Per Cow during January.	Per Cow October to January.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
3/A	17	16-19	11,221-5	660-09	3,784-27	465-39	27-39	151-09
3/B	13	13	7,781	598-54	2,205-94	345-84	26-60	91-71
3/C	12	11-97	7,233	602-75	3,570-84	300-46	25-04	135-81
3/D	11	11	7,533	684-82	2,925-51	277-11	25-19	105-02
3/E	13	13	9,889	760-69	3,284-33	429-42	33-03	137-25
3/F	12	11-03	5,882-5	490-21	3,007-87	228-09	19-01	118-92
3/G	15	13-23	8,639-5	575-97	2,620-24	343-14	22-88	95-82
3/I	11-68	9-68	5,561	476-11	3,029-56	229-81	19-68	121-77
3/J	21	20	10,245-5	487-88	2,369-25	438-99	20-90	93-17
3/K	22-55	17-39	10,962	486-12	2,487-27	473-35	20-99	103-49
3/L	23-68	18-77	9,339-5	394-40	2,206-85	393-17	16-60	91-35
3/M	12	10	4,588	382-33	2,274-75	189-55	15-86	92-47
3/N	23	21-48	14,753	6-1-43	2,815-80	639-9	27-83	115-37
3/O	16-87	16-87	10,628-5	630-02	2,504-63	433-93	25-72	97-98
3/P	17	16-68	10,469-5	615-85	2,827-76	421-30	24-78	107-91
3/Q	37	34-68	16,768-5	453-20	2,345-45	823-24	22-25	98-70
3/R	17	15-84	9,652	567-76	3,302-92	455-01	26-77	149-72
3/T	21-74	21-10	11,984	551-24	3,543-14	512-94	23-59	147-89
3/U	23	20-97	12,485	542-83	2,425-32	534-93	23-26	96-03
3/V	17	15-48	7,539	443-47	2,259-64	313-79	18-46	90-55
Mean	17-83	16-42	9,657-75	541-78	2,737-39	412-48	23-14	110-85

THE AGRICULTURAL OUTLOOK.

REPORT FOR THE MONTH OF MARCH, 1925.

The following report on the general Agricultural condition and outlook of the area represented by the Government Experimental Farm mentioned below has been prepared by the Manager:—

Booborowie.—Weather—No rain has been recorded for March. The weather has been dry and hot with cold nights. Crops—The lucerne fields are looking splendid, and several owners of lucerne fields are harvesting lucerne seed. Natural feed is plentiful. Stock—Livestock are all in good condition and healthy. Pests—No pests worth mentioning.

RIVER MURRAY HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR JANUARY, 1924.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.		Butterfat.			
			Per Herd during January.	Per Cow during January.	Per Cow October to January.	Per Herd during January.	Per Cow during January.	Per Cow October to January.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1/A	15	10	8,664.5	577.63	2,283.29	370.76	24.72	96.33
1/L	17.19	12.19	10,123.5	588.92	2,173.85	433.37	25.21	92.22
1/M	19	14.45	11,410	600.53	2,473.97	587.15	30.90	126.22
1/E	21	17.36	14,956	712.63	2,438.78	636.76	30.35	105.12
1/G	25.68	21.90	20,935	815.22	3,414.80	795.06	30.96	131.03
1/T	14	9.52	7,666.5	547.61	2,224.57	378.00	27.00	111.47
1/X	19.32	16.39	14,837.5	767.98	2,705.34	648.25	33.55	120.27
1/Er			Withdrawn from Association.					
1/Fr	16	13.29	8,180	511.25	2,573.65	382.42	23.90	115.83
1/Ga	23	16.16	13,077	568.56	2,060.30	701.20	30.49	96.19
1/I	22	18.26	13,688.5	622.20	3,027.75	636.22	28.92	133.93
1/J	24.48	17.26	9,927.5	394.93	1,864.77	440.23	17.49	85.12
1/Mm	19	9.65	7,387.5	388.82	1,317.48	331.20	17.43	60.15
1/Nn	16.61	15.74	13,701.5	824.89	3,179.83	546.56	32.91	127.74
1/Oo	19	17.58	11,286.5	594.03	2,683.66	523.18	27.54	121.54
1/Pr	24.87	17.65	13,538.5	544.37	1,978.42	556.16	22.36	75.57
1/Qo	22	18	9,703	441.04	—	458.70	20.85	—
Means	19.88	15.34	11,817.68	594.32	2,388.28	526.58	26.48	104.73

FRUIT TREES! FRUIT TREES!!

Large Stocks of Prime Quality Trees in all Leading Commercial Varieties to offer for the coming planting.

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H. N. WICKS, Proprietor.

*Phone, Balhannah 4.

DAIRY AND FARM PRODUCE MARKETS.

A. W. Sandford & Co., Limited, reported on March 1st, 1925.

BUTTER.—Values have continued on an even keel throughout the month, proving satisfactory to the producers. The dry weather experienced is naturally having the effect of lessening production, but there is still a surplus of lower grades which are being exported to London. Business for choicest lines continues brisk, but poor grades are more difficult to quit. Values at the end of the month were:—Choicest factory and creamery fresh butter in bulk, 1s. 6½d.; first grade bulk, 1s. 1½d.; second and third grade bulk, 11½d. to 1s.; best separators and dairies, 1s. 3d. to 1s. 5½d.; fair quality, 11½d. to 1s. 2½d.; store and collectors', 10½d. to 1s. 0½d.; stale and heated lots, 8½d. to 9d. per lb.

EGGS.—There have been slight fluctuations during the month, varying with the supply and demand, and the quality of many of the consignments has been affected by the continued dry warm weather. Values at present being:—Fresh hen, 1s. 3d.; duck, 1s. 4d. per dozen.

CHEESE.—The supplies coming forward from the factories are considerably less each week, owing to the reduced production, but trade has kept up fairly well, both local and interstate, so that the floors have been kept well cleared. Values are a shade firmer than ruled last month, the range for new makes being at the close of the month from 8d. to 9d. per lb. for large to loaf; semi-matured and matured, 9d. to 10½d. per lb. for large to loaf.

HONEY.—Heavy consignments have been arriving each week, and as the local demand has been somewhat dull stocks have accumulated. There is a slightly better inquiry from interstate, however. Values remain unaltered. Prime clear extracted in liquid condition, 3½d. to 3¾d.; lower grades down to 2d.; beeswax, 1s. 4d. to 1s. 4½d. per lb.

ALMONDS.—Throughout the month fairly heavy quantities were handled, and at the moment stocks on hand are light, and with some lines buyers are unable to fill their requirements, especially in kernels. Brandis, 9d. to 9½d.; mixed soft-shells, 8½d. to 8¾d.; hardshells, 4½d.; kernels, 2s. 1d. to 2s. 1½d. per lb.

BACON.—The trade throughout the month has been extensive, and supplies from the factories have been maintained in all lines. Hams especially have been in good request. The following prices now rule:—Best local hams, 1s. 8d.; best factory cured sides, 1s. 2½d. to 1s. 3d.; best factory cured middles, 1s. 3½d. to 1s. 4½d.; Hutton's "Pineapple" brand sides, 1s. 3d.; Hutton's "Pineapple" brand rolls, 1s. 3d.; Hutton's "Pineapple" brand middles, 1s. 7d.; Hutton's "Pineapple" brand hams, 1s. 8d. to 1s. 9d. per lb.

LARD.—Hutton's "Pineapple" brand lard in packets, 9d.; in bulk, 8d. per lb.

LIVE POULTRY.—It is pleasing to report that although very heavy quantities have been catalogued each week, prices have shown a decided improvement in most lines. During recent sales, poulterers, restaurant keepers, and others have been purchasing extensively for their Easter trade. Crates obtainable on application. The following rates ruled at our last auction:—Prime roosters, 5s. to 6s. 9d. each; nice-conditioned cockerels, 3s. 6d. to 4s. 8d. each; fair-conditioned cockerels, 2s. 8d. to 3s. 3d. each; plump hens, 3s. 8d. to 5s. each; medium hens, 2s. 4d. to 3s. 4d. each; light hens lower; geese, 5s. to 6s. each; ducks, good condition, 4s. to 6s. each; ducks, fair condition, 2s. 6d. to 3s. 6d. each; turkeys, good to prime condition, 1s. 2d. to 1s. 7d. per lb. live weight; turkeys, fair conditioned, 11d. to 1s. 1d. per lb. live weight; turkeys, fattening sorts lower; pigeons, 11d. each.

POTATOES.—Best quality Victorian Carmens at 12s. per cwt. on rail.

ONIONS.—Best brown onions at 14s. to 15s. per cwt. on rail.

INCOME TAX

Is considerably reduced when ALL allowable deductions are claimed!

**Doctors' Accounts,
Hospital Expenses,
Chemists' Accounts,**

And Funeral Expenses have now been added
to the deductions;

ALSO,

WIRE NETTING Expenses, whether renewal
or addition, and many other items.

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DIRECTORS:

G. E. THOMPSON, Manager.

I. GOLOSKY, A.C.U.A., A.A.I.S.
(Late of State Taxation Dept.)

A. SAIDE, A.F.I.A., Secretary
(Late of Federal Taxation Dept.)

IMPORTS AND EXPORTS OF FRUITS, PLANTS, ETC., FEBRUARY, 1925.

IMPORTS.

Interstate.

Apples (bushels)	95
Bananas (bushels)	19,118
Oranges (bushels)	1
Passion fruit (bushels)	82
Peaches (bushels)	1
Pears (bushels)	21
Pineapples (bushels)	791
Plums (bushels)	1
Tomatoes (bushels)	15
Carrots (packages)	3
Potatoes (bags)	12,678
Bulbs (packages)	69
Plants (packages)	5
Seeds (packages)	37
Wine casks (empty)	2,229

Fumigated—17 wine casks.

Rejected—501bush. bananas, 3bush. pears, 3bush. pineapples, 1bush. plums, 3 packages carrots, 10 second-hand cases.

Overseas.

Federal Quarantine Act.

Seeds, &c. (packages)	3,325
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EXPORTS.

Federal Commerce Act.

290 packages fresh fruit, 3,069 packages dried fruit, and two packages honey were exported to overseas markets. These were consigned as follows:—

London.

Dried fruit	3,011
Honey	2

India and East.

Apples	290
Dried fruit	18

Vancouver.

Dried fruit	40
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RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of, and to the end of March, 1925, also the average precipitation to the end of March, and the average annual rainfall.

Station.	For March, 1925.	To end March, 1925.	Av. end March.	Av'ge. Annual Rainfall.	Station.	For March, 1925.	To end March, 1925.	Av. end March.	Av'ge. Annual Rainfall.
FAR NORTH AND UPPER NORTH.					LOWER NORTH—continued				
Oodnadatta	—	0.93	1.84	4.96	Gulnare	0.04	2.24	2.07	19.48
Marree	—	2.27	1.43	6.03	Yacka	0.33	2.52	1.73	16.56
Farina	—	2.95	1.75	6.66	Koolunga	0.37	1.92	1.93	15.95
Copley	—	1.60	1.90	8.35	Snowtown	0.09	1.29	1.86	16.09
Beltana	—	3.20	2.16	8.95	Brinkworth	0.25	3.73	1.92	16.39
Blinman	—	2.54	2.57	12.51	Blyth	0.03	1.30	2.04	17.07
Tarcoola	—	1.35	1.72	7.64	Clare	0.08	2.27	2.69	24.80
Hookina	—	0.50	1.96	13.29	Mintaro	0.15	1.90	2.29	23.86
Hawker	—	1.58	1.86	12.94	Watervale	0.20	1.41	2.81	27.64
Wilson	—	0.92	1.95	12.63	Auburn	0.12	1.48	2.93	24.41
Gordon	—	3.35	2.27	11.52	Hoyleton	—	1.17	2.09	17.91
Quorn	—	0.89	2.00	14.26	Balaklava	0.01	1.31	2.00	15.98
Port Augusta	—	0.44	1.82	9.68	Port Wakefield	—	0.37	2.17	13.28
Port Augusta West	—	0.46	1.61	9.70	Terowie	0.32	4.38	2.20	13.82
Bruce	—	0.52	1.96	10.79	Yarcowie	0.25	4.07	2.24	14.19
Hammond	—	0.55	2.45	12.02	Hallett	—	3.54	1.98	16.53
Wilmington	—	0.70	2.33	18.41	Mount Bryan	—	2.35	1.98	17.13
Willowie	—	0.45	2.03	12.79	Koorunga	0.27	1.25	2.30	18.14
Melrose	—	1.94	3.22	23.53	Farrell's Flat	0.27	1.41	2.14	19.09
Booleroo Centre	—	1.46	2.10	15.82	WEST OF MURRAY RANGE.				
Port Germein	0.08	0.52	1.91	12.90	Manoora	0.16	1.33	2.04	19.12
Wirrabara	—	1.09	2.36	19.85	Saddleworth	0.11	1.31	2.43	19.89
Appila	—	1.39	2.22	15.05	Marrabel	0.18	1.17	2.18	20.00
Cradock	—	1.83	1.88	11.53	Riverton	0.05	0.97	2.48	20.97
Carrieton	—	1.12	2.04	12.95	Tarlee	0.14	1.16	2.22	18.18
Johnburg	0.03	1.69	1.77	10.99	Stockport	0.15	1.46	2.15	16.89
Eurelia	—	1.57	1.82	13.62	Hamley Bridge	0.10	1.95	2.20	16.82
Orroroo	—	0.92	2.37	13.73	Kapunda	0.20	1.50	2.57	20.04
Nackara	—	4.56	2.33	11.85	Freeling	0.22	1.51	2.29	18.19
Black Rock	—	1.17	2.13	12.83	Greenock	0.34	1.59	2.47	21.93
Ucoita	—	1.62	2.10	11.91	Truro	0.42	1.89	2.40	20.43
Peterborough	0.16	2.11	2.22	13.60	Stockwell	0.39	2.14	2.34	20.58
Yongala	0.21	2.58	2.06	14.73	Nuriootpa	0.64	2.26	2.38	21.17
LOWER NORTH-EAST.					Angaston	0.65	2.50	2.51	22.71
Yunta	—	1.33	1.96	8.79	Tanunda	0.43	1.52	2.58	22.40
Waukaringa	0.03	1.48	1.76	8.47	Lyndoch	0.34	1.34	2.28	23.41
Mannahill	—	1.90	1.98	8.62	Williamstown	0.55	2.17	2.56	27.75
Cockburn	0.69	1.85	1.82	8.29	ADELAIDE PLAINS.				
Broken Hill, N.S.W.	0.61	3.09	2.12	9.99	Owen	0.05	2.41	—	—
LOWER NORTH.					Mallala	0.11	2.70	2.07	16.92
Port Pirie	0.14	0.62	1.97	13.58	Roseworthy	0.36	0.99	2.12	17.59
Port Broughton	0.48	0.74	1.76	14.33	Gawler	0.26	1.39	2.33	19.24
Bute	0.07	1.17	1.80	15.90	Two Wells	0.16	1.73	1.98	16.03
Laura	0.37	1.88	2.23	18.34	Virginia	0.14	1.80	2.14	17.51
Caltowie	0.25	1.88	2.22	17.27	Smithfield	0.21	1.17	2.14	17.62
Jamestown	0.38	2.49	2.17	18.04	Salisbury	0.57	1.39	2.34	18.75
Gladstone	0.15	1.02	2.00	16.42	North Adelaide	0.45	7.69	2.59	22.66
Crystal Brook	0.26	1.85	1.96	16.00	Adelaide	0.39	6.88	2.44	21.18
Georgetown	0.35	1.52	2.21	18.64	Glenelg	0.24	1.96	2.25	18.63
Narriidy	0.16	1.33	2.02	16.36	Brighton	0.21	1.41	2.55	21.60
Redhill	0.16	1.11	2.00	17.38	Mitcham	0.43	3.99	2.51	24.54
Spalding	0.07	2.90	2.17	20.24	Glen Osmond	0.37	3.46	2.64	26.34
					Magill	0.56	2.68	2.80	25.81

RAINFALL.—continued.

Station.	For March, 1925.	To end March, 1925.	Av. end March.	Av'ge Annual Rainfall
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MOUNT LOFTY RANGES.

Teatree Gully.....	0.47	2.43	2.00	28.32
Stirling West	0.37	4.90	4.45	47.30
Uraidla	0.56	5.00	4.29	44.79
Clarendon	0.35	3.79	3.63	33.29
Morphett Vale	0.31	2.17	2.59	23.07
Noarlunga	0.21	1.54	2.27	20.66
Willunga	0.68	3.93	2.75	26.09
Aldinga	0.37	1.82	2.45	20.56
Myponga	0.36	2.04	2.68	30.35
Normanville	0.21	1.32	2.22	20.88
Yankalilla	0.26	1.13	2.56	23.59
Mount Pleasant	0.61	2.66	2.76	27.62
Birdwood	0.64	2.23	2.91	29.78
Gumeracha	0.63	2.39	2.21	33.69
Millbrook Reservoir	0.59	2.32	3.11	38.63
Tweedvale	0.59	3.29	3.11	36.12
Woodside	0.62	2.54	3.10	32.48
Ambleside	0.35	2.93	3.31	25.23
Nairne	0.44	2.27	3.18	28.63
Mount Barker	0.48	2.13	3.33	31.54
Echunga	0.53	4.72	3.39	33.41
Macclesfield	0.53	4.33	3.18	30.90
Meadows	0.53	3.88	3.68	36.61
Strathalbyn	0.71	3.31	2.46	19.45

MURRAY FLATS AND VALLEY.

Meningie	1.02	2.69	2.12	18.83
Milang	0.44	2.36	2.01	15.47
Langhorne's Creek	0.51	3.65	1.95	14.88
Wellington	0.45	2.77	2.16	14.85
Tailem Bend	0.39	3.57	2.25	14.92
Murray Bridge	0.47	2.29	2.08	13.98
Callington	0.38	2.01	2.13	15.56
Mannum	0.68	2.73	1.86	11.66
Palmer	0.45	2.57	2.11	15.58
Sedan	0.67	2.44	1.81	12.37
Swan Reach	0.42	2.90	1.93	11.05
Blanchetown	0.39	1.98	1.81	10.01
Eudunda	0.19	2.67	2.20	17.53
Sutherland	0.17	1.41	1.55	11.27
Morgan	0.32	4.84	1.48	9.26
Waikerie	0.25	3.67	3.58	9.79
Overland Corner	0.34	2.69	1.97	10.15
Loxton	0.62	2.31	2.60	12.36
Renmark	0.40	2.30	1.95	10.98
Monash	0.41	1.84	—	—

WEST OF SPENCER'S GULF.

Eucla	0.16	4.38	2.01	9.98
Fowler's Bay	—	0.85	1.37	12.14
Penong	0.19	0.40	1.81	12.61
Ooduna	—	0.91	0.88	10.25
Smoky Bay	—	0.58	1.26	11.16
Petina	—	0.41	1.43	13.12
Streaky Bay	0.05	0.97	1.52	15.11
Talia	—	0.66	1.27	15.36
Port Elliot	—	0.56	1.34	16.66
Port Lincoln	0.02	0.50	1.92	19.71
Cummins	—	1.62	1.27	18.85
Yeelanna	—	0.79	1.41	—
Ungarra	0.04	1.01	1.68	17.35

Station.	For March, 1925.	To end March, 1925.	Av. end March.	Av'ge Annual Rainfall
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WEST OF SPENCER'S GULF.—continued

Dark's Peak	—	1.36	2.07	16.43
Kimba	—	0.98	2.29	15.85
Wudinna	—	1.95	—	—
Minnipa	—	2.68	2.36	15.32
Tumby	0.03	1.00	1.51	14.62
Carrow	—	0.52	2.83	14.31
Arno Bay	0.01	0.68	1.86	13.01
Cleve	—	1.44	1.94	—
Cowell	0.03	1.04	1.86	11.57

YORKE PENINSULA

Walleroo	0.15	0.82	1.85	14.19
Kadina	0.16	0.76	1.89	16.08
Moonta	0.03	0.59	1.89	15.39
Green's Plains	0.06	0.61	1.78	15.97
Maitland	0.06	0.85	2.06	20.31
Ardrossan	0.01	0.43	1.73	14.25
Port Victoria	0.08	0.49	1.63	15.62
Curramulka	—	0.78	2.01	18.31
Minlaton	0.01	0.68	1.87	18.06
Brentwood	—	0.54	1.70	16.02
Stansbury	0.27	0.60	1.88	17.15
Warooka	0.02	0.41	1.67	17.97
Yorketown	0.05	1.08	1.69	17.35
Edithburgh	0.07	0.82	1.87	16.70

SOUTH AND SOUTH-EAST.

Cape Borda	0.17	1.17	2.04	25.13
Kingscote	0.14	0.81	1.82	19.15
Penneshaw	0.40	0.85	1.93	19.53
Victor Harbor	0.75	1.72	2.44	21.51
Port Elliot	0.62	2.28	2.40	20.17
Goolwa	0.75	3.38	2.32	17.87
Meribah	0.37	2.17	—	—
Alawoona	0.43	1.80	—	—
Mindarie	0.57	2.66	1.13	12.39
Sandalwood	0.43	2.59	1.83	14.98
Karoonda	0.53	2.98	1.62	15.32
Pinnaroo	1.24	3.70	2.50	15.60
Parilla	0.96	3.17	1.65	14.77
Lameroo	1.30	5.00	2.01	16.51
Parrakie	1.16	5.62	1.77	14.83
Geranium	1.15	4.61	1.91	16.83
Peake	1.08	3.79	2.42	16.86
Cooke's Plains	0.71	3.96	2.03	15.31
Coomandook	0.85	3.65	2.06	17.50
Coomalpyne	1.51	3.93	2.03	17.51
Tintinara	0.60	4.87	2.03	18.89
Keith	0.51	2.47	2.04	18.38
Bordertown	0.18	2.81	2.19	19.46
Walseley	0.29	2.52	1.92	18.31
Frances	0.13	3.06	2.26	19.93
Naracoorte	0.27	1.70	2.50	22.63
Penola	0.18	3.16	3.06	23.10
Lucindale	0.38	1.81	2.27	24.53
Kingston	0.05	1.88	2.37	24.71
Robe	0.15	2.28	2.51	27.14
Beachport	1.92	2.85	2.86	29.51
Milliecent	0.09	2.88	2.21	33.25
Kalangadoo	0.10	4.28	2.91	31.25
Mount Gambier	0.10	3.76	3.82	26.63

AGRICULTURAL BUREAU REPORTS.

INDEX TO CURRENT ISSUE AND DATES OF MEETINGS.

Branch.	Report on Page	Dates of Meetings		Branch.	Report on Page	Dates of Meetings	
		April	May			April	May
Alawoona	•	—	—	Frances	•	25	30
Aldinga	•	8	6	Gawler River	•	6	11
Allandale East	†	3	8	Georgetown	•	4	2
Alma	†	28	12	Geranium	•	25	30
Amyton	•	6	11	Gladstone	851	3	8
Angaston	•	—	—	Glencoe	•	9	7
Appila-Yarrowie	•	—	—	Glossop	•	1	6
Arthurton	852	—	—	Goode	854	8	6
Ashbourne	•	—	—	Green Patch	854	6	4
Balaklava	•	11	9	Gulnare	•	—	—
Balhannah	866	3	8	Gumeracha	•	6	11
Barnera	862	6	4	Halidon	•	—	—
Beetaloo Valley	•	—	—	Hartley	864	—	—
Belalie North	•	4	2	Hawker	•	7	5
Berri	•	8	6	Hilltown	•	•	—
Bethel	852	4	12	Hookina	•	9	7
Big Swamp	•	—	—	Inman Valley	•	—	—
Blackheath	862	3	8	Ironbank	•	3	6
Black Springs	862	•	—	Kadina	•	—	—
Blackwood	867	13	11	Kalngadoo (Women's)	868	11	9
Block E	•	—	—	Kalngadoo	868	11	9
Blyth	•	4	2	Kangarilla	867	—	—
Boooleroo Centre	•	3	8	Kanmantoo	•	4	2
Borrika	•	—	—	Karoonda	•	8	6
Brentwood	•	9	7	Keith	•	—	—
Brinkley	862	4	2	Ki Ki	•	—	—
Brinkworth	861	6	4	Kilkerran	852	7	7
Bundaleer Springs	•	—	—	Kimba	•	—	—
Bunora	864	•	8	Kingston-on-Murray	•	—	—
Bute	•	9	7	Kongorong	•	6	4
Butler	•	—	—	Koonibba	•	9	7
Calca	•	—	—	Koppio	•	6	4
Cadell	•	—	—	Kringin	855	4	2
Canowie Belt	•	—	—	Kybyholite	•	7	7
Carrow	•	8	6	Lake Wangary	•	4	2
Charra	•	8	6	Lameroo	•	4	2
Cherry Gardens	867	—	—	Laura	852	11	9
Clanfield	862	—	—	Leaswood and Forest Range	•	—	—
Clare	•	—	—	Light's Pass	•	5	—
Clarendon	•	—	—	Lipson	•	—	—
Claypan Bore	•	8	6	Lone Gum and Monash	†	8	6
Cleve	•	8	6	Lone Pine	852	—	—
Cobdogla	•	—	—	Longwood	867	—	—
Collie	•	—	—	Loxton	•	—	—
Colton	•	4	2	Lucindale	•	—	—
Coomandook	•	8	6	Lyndoch	†	9	7
Coonalpyn	•	10	8	McLachlan	854	—	—
Cradock	•	—	—	McLaren Flat	867	—	—
Crystal Brook	•	4	2	MacGillivray	A.M.	7	5
Cungena	•	—	—	Maitland	•	9	7
Currency Creek	863	10	8	Mallala	•	20	18
Cygnat River	•	9	7	Maltee	•	3	8
Darke's Peak	•	—	—	Mangalo	•	—	—
Denial Bay	•	—	—	Mannanarie	•	9	7
Edillilie	•	4	2	Marama	•	—	4
Elbow Hill	†	14	12	Meadows	•	8	6
Eurelia	•	11	9	Milang	864	11	9
Farrell's Flat	•	—	—	Millicent	•	3	1
Finnis	†	3	8				

INDEX TO AGRICULTURAL BUREAU REPORTS—continued.

Branch.	Report on Page	Dates of Meetings		Branch.	Report on Page	Dates of Meetings	
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Miltalie	†	4	2	Roberts and Verran	854	9	8
Mindarie	•	6	4	Rockwood	†	6	4
Minlaton	•	3	8	Rosedale	†	—	—
Minnipa	•	8	6	Rosy Pine	•	—	—
Monarto South	862	4	2	Rudall	•	9	7
Moonta	•	3	8	Saddleworth	•	—	—
Moorak	•	9	7	Saddleworth	•	—	—
Moorook	856	6	11	(Women's)	852	10	12
Morchard	†	4	2	Salisbury	•	7	5
Morphett Vale	•	9	7	Salt Creek	•	—	—
Mount Barker	865	8	6	Sandalwood	•	—	—
Mount Bryan	•	—	—	Shoal Bay	†	—	—
Mount Bryan East	•	—	—	Smoky Bay	•	4	2
Mount Gambier	888	11	9	Spalding	•	17	15
Mount Hope	•	4	2	Stirling	866	4	—
Mount Pleasant	†	—	—	Stockport	†	9	—
Mount Remarkable	•	—	—	Streaky Bay	•	11	9
Mount Schank	•	7	5	Strathalbyn	867	7	5
Mundalla	•	8	6	Talia	•	11	9
Murray Bridge	•	—	—	Tantanoola	867	4	2
Murraytown	•	—	—	Taplan	•	7	5
Myponga	†	4	6	Tarcowie	851	7	5
Myra	•	4	2	Tarlee	†	—	—
Nantawarra	†	9	7	Tatiara	•	—	—
Naracoorte	•	11	9	Tweedvale	•	9	7
Narridy	•	11	9	Two Wells	•	—	—
Narrung	•	11	9	Uraidla & Summertown	•	6	4
Neeta	•	—	—	Veitch	•	—	—
Nelshaby	852	4	2	Virginia	•	8	6
Netherton	•	8	6	Waikerie	•	11	9
New Residence	•	8	6	Wall	•	—	—
North Booborowie	•	7	5	Wanbi	•	—	—
North Bundaleer	†	—	—	Warcowie	†	7	5
Nunkeri and Yurgo	•	8	6	Watervale	•	—	—
O'Loughlin	•	—	—	Weavers	†	6	11
Orroroo	•	—	—	Wepowie	•	6	4
Owen	852	3	8	Whyte-Yarcowie	•	6	11
Parilla	•	4	8	Williamstown	•	—	—
Parilla Well	•	6	11	(Women's)	•	3	6
Paruna	•	—	—	Williamstown	•	3	8
Paskeville	†	3	8	Willowie	•	8	6
Pata	•	—	—	Wilkawatt (Women's)	862	—	—
Penola	•	4	2	Wilmington	•	8	6
Penneshaw	867	13	11	Windsor	†	7	—
Petina	†	25	23	Winkie	†	—	—
Pinnaroo	†	10	8	Wirrabara	•	—	—
Pinnaroo (Women's)	862	3	1	Wirrega	•	—	—
Pompoota	•	8	13	Wirrilla	•	4	2
Poochera	†	1	6	Wirrulla	•	—	—
Port Bronghton	•	3	8	Wookata	•	—	—
Port Elliot	867	18	16	Wudinna	855	—	—
Port Germein	•	11	9	Wynarka	860-61	—	—
Pygery	855	4	2	Yacka	•	7	5
Ramco	†	6	4	Yadnarie	†	7	5
Rapid Bay	866	4	2	Yallunda Flat	•	—	—
Redhill	†	—	—	Yaninee	•	—	—
Rendelsham	•	6	4	Yeelanha	855	4	2
Renmark	•	9	7	Yongala Vale	•	—	—
Riverton	•	—	—	Yorketown	•	—	—
Riverton (Women's)	•	—	—	Younghusband	†	9	7

* No report received during the month of March. † Formal. ‡ Held over until next month.
A.M. Annual Meeting.

THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA

Every producer should be a member of the Agricultural Bureau. A postcard to the Department of Agriculture will bring information as to the name and address of the secretary of the nearest Branch

If the nearest Branch is too far from the reader's home, the opportunity occurs to form a new one. Write to the department for fuller particulars concerning the work of this institution.

REPORTS OF BUREAU MEETINGS.

MIDDLE-NORTH DISTRICT.

(PETERBOROUGH TO FARRELL'S FLAT.)

BRINKWORTH, March 9th.—Twenty-five members and 13 visitors attended the March meeting, which took the form of a "Question Box Evening." In reply to a question, Mr. G. Adams said pea growing could be carried on profitably if the crop were worked in conjunction with wheat growing and lamb raising. In answer to the question, "What is the best depth to sow wheat?" members were of the opinion that the grain should be sown as shallow as possible, about 2in.

GLADSTONE (Average annual rainfall, 16in.).

March 6th.—Present: 12 members.

SEED WHEAT.—In the course of a short paper Mr. L. Sargent said a farmer should always select the seed before the crop was reaped, providing the latter was free from weeds and barley. If the barley was not too plentiful, he should go ahead of the harvester and hand-pick. Wheat free from barley should be worth 2d. per bushel more than a mixed sample, in order to encourage farmers to grow clean crops. Mixed wheats also detracted from the value of good, clean seed. Very often that was caused in seeding time by being hasty and not cleaning out the drill before another variety of wheat was sown. When wheat was being carted into the barn every bag should be branded by a letter corresponding with the variety of wheat. Red wheats should not be sown, because they spoiled the good name of Australian wheat in overseas markets. In the discussion that followed, Mr. J. Fisher considered that a change of seed from an adjacent district was essential if they were to maintain the grain true to name and characteristics. Mr. E. Hollitt believed in thoroughly grading and cleaning wheat set aside for seed. Mr. J. Gale believed in the value of experimental plots under Government supervision. Mr. T. Kerin was of the opinion that better results were obtained by securing seed from crops grown on red ground. Mr. J. Potter said he had procured from a neighbouring farmer seed which had been affected with smut. He pickled it, and no smut appeared in the crop. He used $\frac{1}{2}$ lb. bluestone to 4galls. of water.

TARCOOWIE (Average annual rainfall, about 15 $\frac{1}{2}$ in.).

February 3rd.—Present: eight members.

PROVISION FOR DROUGHT.—In the course of a short paper dealing with this subject, Mr. A. Watson first suggested that a stack of hay, in addition to that required to carry the stock over the current season, should be provided. If a stack of straw was made and sprinkled with salt the stock would appreciate it in the winter. He was of the opinion that their district should grow more oats. One thousand bags would not require a great deal of storage room, and the grain would be of great value in a bad year. Conservation of fodders in the form of hay and cereals would not be of very much assistance unless adequate provision was made to prevent damage by weather, rats, and mice. Green sheoaks should not be cut for firewood, but conserved, because they could be turned to good account in times of serious drought.

LAURA, February 7th.—Mr. Watt read a paper, "A Resume of the Past Harvest," and an interesting discussion followed, in which it was generally agreed that the average yields for the district were—Wheat, 23bush. to the acre; and hay, 4 tons to the acre. A further meeting was held on February 21st, when Messrs. Watt and Peck gave a report of a tour that had been made through the Adelaide Hills for the purpose of inspecting "top dressing" experiments.

NELSHABY, March 6th.—A large number of members attended the March meeting, when Mr. S. B. Opie (Field Officer of the Department of Agriculture) presented prizes to the successful competitors in the recent Nelshaby Crop Growing Competition.

BETHEL, March 3rd.—The Chief Agricultural Instructor (Mr. W. J. Spafford) delivered an address, "Agricultural Grains," to a gathering of 10 members and eight visitors.

LOWER-NORTH DISTRICT. (ADELAIDE TO FARRELL'S FLAT.)

BLACK SPRINGS.

February 3rd.—Present: 13 members.

PICKLING WHEAT.—Mr. B. Heinrich, who read a short paper dealing with this subject, said after six years' close observation he had come to the conclusion that it was necessary to pickle wheat at least three weeks before drilling, in order to allow the grain to dry and give the bluestone an opportunity to kill the spores of smut. One pound of bluestone dissolved in 10galls. of water made the pickling solution the correct strength. The addition of 2lbs. of salt to every 1lb. of bluestone assisted the pickle in destroying smut spores. The best method of pickling he considered was that in which a large cask was used and the bag allowed to remain in the solution until it was noticed that air bubbles ceased rising to the surface. If one adopted the practice of pickling on a floor, the bag in which the treated wheat was placed should also be pickled.

A further meeting was held on March 2nd, when Mr. S. R. Cockburn delivered an address, "Top Dressing Pastures."

LONE PINE, February 2nd.—Eighteen members and seven visitors, including five members of the Light's Pass Branch, attended the meeting, when an interesting paper, "The Thoroughbred Horse," was contributed by Mr. W. G. Bogner.

OWEN, March 6th.—The Hon. Secretary (Mr. R. S. Harkness) read a paper, "Horses v. Tractor," which was contributed by Mr. F. E. Place, B.V.Sc., M.R.C.V.S., &c. (Veterinary Lecturer at the Roseworthy Agricultural College). In the discussion that followed, Mr. A. Freebairn said that his tractor had assisted in the harvesting of 15,000 bags of wheat and had only cost £6 for repairs. He would not be able to farm satisfactorily without a tractor because of the difficulty in employing labor to work horse teams and the failure of horses to cover sufficient ground whilst the soil was in proper condition.

SADDLEWORTH (WOMEN'S), February 25th.—The monthly meeting was held at the residence of Miss Partridge. The President (Mrs. G. Crawford) delivered an address, in which she explained the objects of the Agricultural Bureau. The officers for the ensuing year were also elected.

YORKE PENINSULA DISTRICT. (TO BUTE.)

ARTHURTON, February 18th.—Members discussed items of interest relating to the 1924-25 harvest, particular attention being given to the varieties of wheat which had given the best results, Ford, Currawa, Major, Minister, and Federation being those most favorably commented upon.

KILKERRAN, March 10th.—Mr. S. R. Cockburn delivered an address, "Top Dressing Pastures."

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WESTERN DISTRICT.

ROBERTS AND VERRAN.

February 5th.—Present: nine members and visitors.

AFFORESTATION.—The following paper was read by the Hon. Secretary (Mr. E. EVANS):—"The advantages to be derived from a systematic plan of tree planting are many, the most important from our point of view being the provision of shelter for stock and a supply of posts and other timber. With reference to the best varieties to grow, I think the sugar gum is the most suitable for this district. It is hardy and grows more rapidly than any other gum, and its well balanced appearance is a relief to the eyes after viewing the somewhat straggly growth of the mallee. The Tasmanian blue gum also grows well here, despite the fact that it comes from a much wetter climate. The red gum may also be grown, but is much slower than the former varieties. Pines I would not recommend, except for ornamental purposes near the homestead, owing to their extremely slow growth. Swamp oaks provide good wind breaks, but stock are very fond of the foliage, and the trees should be protected with a strong fence. Pepper trees give splendid shade, but have the disadvantage of harboring various stock parasites, which spoil them for shelter trees. I favor the system of planting in wide belts or compact blocks, rather than in single rows along fences, because better shelter is thus obtained, the trees grow straighter, and better timber is provided. As all plantations should be fenced until they have almost reached maturity, a great deal of fencing is also saved by this method. Young trees will do better if the ground is cultivated around the roots a couple of times a year for the first three or four years, especially if it is done just after a good rain. Care should be taken not to plant large growing trees close to buildings or the garden. Only small shrubs should be grown in the immediate vicinity of the homestead. Strong fences should be erected around all plantations, because many years will elapse before the trees are strong enough to allow the stock access to them, and many years' work may be ruined in one day through horses or cattle breaking through the fence. In conclusion, I would like to point out that the value of the mallee as shelter should not be lost sight of, and, where the scrub is of a good size, belts should be left in paddocks and along boundary fences." In the discussion that followed, Mr. A. Cowley considered it advisable to plant trees other than the native scrub. He favored a thick planting and a subsequent thinning out in order to provide posts and other useful timber. Mr. W. Whittaker said if patches of scrub were left they should be in the centre of the paddocks. Trees close to fences harbored vermin. For their district he favored sugar gums. Mr. S. Smith said that where the native timber was small it was a good plan to plant trees. Mr. D. Jonas recommended the planting of wattles, especially on sandy soils.

BUNORA, February 26th.—The first meeting of the Bunora Branch was held on February 26th. Officers of the Branch were elected, and it was decided that meetings should be held on the night of full moon at 8 p.m.

GOODE, February 11th.—The meeting discussed items of interest relating to the past harvest. It was reported that Mr. E. Nicholls had won the trophy presented by Mr. H. B. Smith for the best 100 acres of crop sown on fallow land. Mr. E. Nicholls offered a trophy for the 1925-26 season for the best 50 acres of crop.

GREEN PATCH, February 9th.—The monthly meeting was held at Mr. K. Hyde's homestead. Members discussed the questions "Coast Disease in Sheep" and "Rickets in Sheep." Mr. Hyde had several lambs affected with rickets. They were being treated with bluestone and Mr. Hyde was very pleased with the result. Out of 100 lambs affected and treated only half a dozen were now showing signs of the disease. Members stated that it was only fat lambs that were troubled with rickets. Lambs that were on poor feed rarely showed symptoms of the disease.

McLACHLAN, March 6th.—A large number of members and visitors attended a social and dance, which was held on March 6th.

PYGERY, February 7th.—Mr. R. Woodrup gave a report of the 1924 Annual Congress. Other matters brought forward for discussion were "Crop Competitions" and Tractor v. Horses."

PYGERY, March 7th.—A paper dealing with the subject "Seed Wheat" was read by Mr. G. Day, and an instructive discussion followed.

WUDINNA, March 9th.—The Chairman (Mr. E. J. Barnes) exhibited a sample of lucerne that had been grown without irrigation on his farm, the seed having been sown with a cereal crop. Subterranean clover was discussed, the opinion being expressed that the average rainfall of the Wudinna district was insufficient for the successful cultivation of that plant.

YEELANNA, March 7th.—The meeting took the form of a "Question Box Evening," when several subjects of local interest were brought forward for discussion.

EASTERN DISTRICT.

KRINGIN.

October 11th.—Present: eight members.

FALLOWING.—In the course of a short paper, "Fallowing in New Mallee Areas," Mr. J. Matthews suggested that all stubble and grass should be burned in order to kill as many shoots as possible. The plough should be worked to a depth of 4 in., the work being started in June and completed not later than August. The land should then be left in a rough state until October, when harrows should be run over the fallow a couple of times to leave a smooth surface. All stumps should be picked up and all shoots cut back to prevent sand drift, which would

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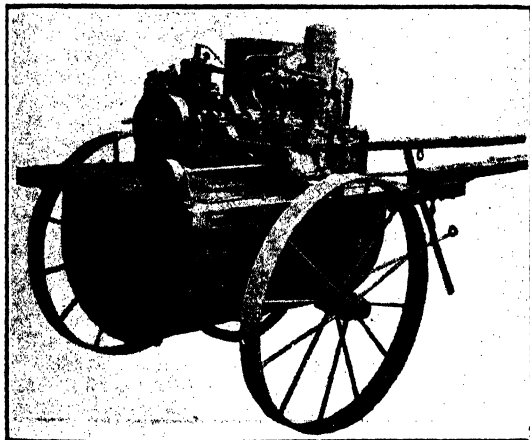
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cause ridges on the land. It was advisable to work the land directly after harvest with a light cultivator, and then, if the harrows were worked two or three times, it would make a good seed bed for the drill in April.

MOOREBOOK.

January 30th.—Present: 11 members.

HARVESTING AND DRYING VINE FRUITS.—Mr. V. Davies read the following paper:—‘Before commencing harvesting, clean up under the vines; pickers cannot pick grapes and dodge Bathurst burrs, &c., at the same time. Then again, if any bunches are dropped, it is much easier to pick them up if the ground is not weedy, and if the berries are falling badly pickers can use bags under the vines to catch the loose berries. Currants should be thoroughly ripe when picked, the sugar content high, and the skin dark black in color. Currants gathered when the skin is red give only a second grade article. The trade requires a bold, fleshy, black dried article with the natural bloom on the fruit. According to experts currants picked under 13.5 sugar test do not pay, and the best results are obtained when the test reaches 16 Beaume. If there is only a small crop to harvest, one can wait until the sugar test reaches 16, and this means better weight when dried, but when a grower has many acres to harvest it is wise to start on a 14 test, and as picking proceeds the sugar test will increase. To ensure getting a good, even sample, go over the vines two or even three times, especially vines carrying a lot of foliage and those near channels, picking only the darkest, the lighter colored fruit being left to darken in color. Do not pick currants directly after rain; they will split and break when being spread, but will, as a rule, if left on the vine, providing good weather follows, take up again. After an irrigation fruit should not be picked for a week or 10 days. When putting out picking tins, try to place them alongside the fruit to be picked; it does not pay to have pickers taking a route march after buckets. Have buckets filled, but not topped up. For picking, I prefer light secateurs to a knife, as one is apt with a knife to jerk the bunch when cutting, and if the fruit is thoroughly ripe or wilted berries will shake off. Pickers should place the picking tin or box directly under the fruit being picked, not behind them in the middle of the row. The bunches should be cut with one hand and guided into the bucket with the other. I find with this method very few berries fall on the ground, and unless the fruit has been split by rain there is no need to arm the pickers with bags, &c. Should the berries fall badly, get a chaff bag with two sticks fastened down the two long sides. These are spread under the vines being picked, and the tin placed on the bag. When shifting along or emptying the berries caught on the bag, take the two sticks and bring them together, so as to form a trough down which the berries will run into the picking tin. In this district, rows running north and south without a foliage wire have most of the foliage on the east side, and I find one picker on the west side can gather all the fruit much more quickly and easily than crawling in amongst the foliage on the east side. Rows running east and west require two pickers, one on each side. To get a good black currant, the fruit should be shade dried. Some growers consider this is not necessary, and I would like to suggest to these growers this year to cover portion of their racks and then compare this fruit with the other sample not shade dried. Last year being a late year, a lot of currants were piebald in color, although they contained a fair amount of sugar. I found by shade drying this fruit it colored up well on the rack and packed three crown, so I would strongly advise covering up the racks when the fruit is inclined to be red or light in color, and I feel sure it will pay growers to shade dry all currants. Fix on the covers before starting to fill the rack, and then when the rack is filled run side curtains along both sides and rain will not affect the currants. Currants should be spread one bunch thick, like a carpet. Do not throw the fruit on or the netting will damage a lot of berries, allowing the juice to escape, cause the fruit to become sticky, and destroy the bloom on the fruit. In filling my racks I find by starting in the middle and working along the tier towards the strainer the tiers do not sag as much as if one started from the end. Currants take about three weeks to dry. When the bunches hanging through the netting will not squash the fruit is ready for shaking or rubbing off on to hessians.

There are various ways of removing the fruit. As all my racks are moveable, I find shaking down quicker and easier, with less damage to the fruit, than rubbing off. Before starting to shake down, spread the hessian used for side curtains alongside the rack on both sides, so that the fruit cannot fall under the hessian already on the bottom of the rack. Shake down two tiers, then place another short hessian on the empty tier, and shake down two more tiers, and so on. After all the fruit is off, collect the side Hessians and any fruit on them first, then draw out the short Hessians on the rack and spread them out in the sun to finish off. This sunning is as important as putting the fruit on the rack, and it also helps to counteract any trouble likely to occur from weevils, &c. Currants do not need so much raking about as dipped fruit; the less the better, otherwise you may lose some of the bloom. After a couple of days, test the fruit in the evening for dryness, by pressing the berries (not bucks) between finger and thumb. If no moisture escapes, allow the fruit to cool off, then run together. Do not run fruit together whilst hot or it will sweat and become sticky. Never go by the feel of fruit run together at night for boxing. Test again in the morning, and if the berries still stand pressing without showing moisture tip the fruit straight into sweats. If the fruit needs another half a day, leave it turned in until noon, then spread it out evenly in the sun. Sometimes in very hot weather fruit at midday feels like chips. Do not run it together, but spread an empty hessian over the top without disturbing the fruit; then turn in at evening time. Every grower should have a shed to place the sweats in when filled. After a week in the sweats the fruit should be ready for the packing shed. By this time the bucks will have dried and the currants will be a nice even texture. Currants can also be dried on wooden trays. These are left stacked about 14 in each stack, until nearly dry, then transferred to hessian to be finished off in the sun. As a rule tray dried currants will dry a much superior article to the rack dried. Sultanas should be picked when the fruit has reached about 13° Beaume test. The dip should be built with a return flue, which gives greater heat and saves

Cyclone

METAL GATES AND FENCES

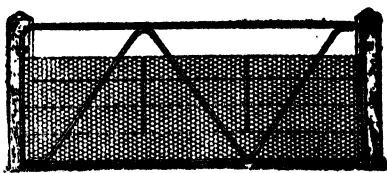


Fig. 132. Cyclone "N" Paddock Gate with round corners swung on face of posts. Can be had either rabbit-netted or with plain wires which make the gate sheep-proof.

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fuel. A few empty caustic tins can be placed in the bottom of the dip to catch sand and cooked berries, &c. Have a skimmer handy to remove scum, &c., from the top of the dip. Before dipping, cut up any bunches that are too solid or big to dry evenly. Bunches of fruit from cinctured vines should be split down the middle of the stalk to ensure the solution reaching all the berries. Pick out all leaves, because these collect lye and are a nuisance in the dip. So much depends upon the season, soil, and condition of the fruit that it is difficult to lay down a definite strength for the dip. To a reasonable extent the weaker the dip, the better the color. Sultanias when dry should be a bright golden color, and judging by reports from overseas, the lighter in color the better the price. A few minutes after being placed in the dip the dipped fruit should show minute cracks around the stem end of the berries. Do not select a bunch that has turned brown on the vines from being exposed to the sun for testing the dip, because what would crack these berries enough to show up would split fruit which had a green appearance, because of protection afforded by foliage. Choose this latter fruit for making the test. Bring the water in the dip close to the boiling point before putting in the caustic. Caustic makes the water boil very fiercely, so that something with a long handle attached for putting it in should be used. Allow 1lb. of caustic for each 20galls. of water, then test. Should the fruit be cracked severely, the lye needs diluting, but if no cracks are noticeable, more caustic can be added. When the dip is at the required strength, throw in a few ripe bunches and allow them to boil for a while to remove the harshness of the new dip. Do not fill the dipping tins, but put in so much fruit that when the tin is plunged into the dip with a swing the lye will run across the top bunches a few inches deep. On immersing the fruit, the nose of the dipping bucket is dipped in first and the lye is thrown back over the grapes, after which the bucket should be withdrawn and placed on the draining slide. This ensures a more even dip than plunging the bucket straight down, which floats out any loose berries in the tin and the bottom bunches get too much of the lye, and will generally be badly split in consequence. Dipped fruit should be spread on the rack as quickly as possible. If fruit has to be carted any distance or left standing in dip tins, it should be passed through a cold water dip, otherwise the fruit will darken if left any length of time. The dip tank should be kept at one level. After dipping about 50 tins test the dip again and add more caustic to replace what has been taken out by the fruit and to make up for the water that is added. Roughly, the amount of caustic to add is about 4oz. Keep the dip free from loose berries, scum, &c. Change the dip often, every day if possible, because a fresh dip assists in giving the fruit a better color. Keep back a bucket of the old dip to mix with the new to take off the harshness of the latter. If there is plenty of rack room, spread the fruit as thinly as possible, so that it will dry quickly. The thicker the fruit is spread the longer it takes to dry, and, in addition, the color will be darker. Should rain fall and the fruit becomes wet, it is liable to develop mould. Use a spreading board to stop the berries falling to the ground and spread to the edge of the netting. Three tray boards nailed to a cleat each end will serve the purpose. Make a clip of hoop iron to clip the top of the board to the tier that is being spread and give the board a good slant on to the tier below, so that any fruit falling will run on to the rack and not the ground. Before placing the fruit on the rack, place the trays on hessian under the bags to be filled to catch loose berries. These berries generally dry a shade darker, and should not be mixed with other fruit. These trays should be shifted as soon as this portion of the rack is filled and placed out in the sun, care being taken to see that the berries are only one deep. These berries go off very quickly if not attended to straight away. Racks of dipped fruit should be filled evenly on all tiers each day. Do not fill up one tier to-day, then place freshly dipped fruit on the next tier to-morrow. Avoid placing wet fruit over dry or partially dried fruit. The extra caustic dripping on same will tend to darken the fruit. When emptying dip buckets do not tip the fruit out in a heap, because every time a bunch of dipped fruit is handled berries will fall. Place the dipping tin on the netting and give a sweeping movement towards the centre in emptying out. After a little practice very little handling will be necessary. Do not spread the middle of the netting, especially 5ft., too thickly, or the outside bunches will be 'dry enough to come off, whilst the bunches in the centre of the rack are still on the green side and will squash when being removed. Dipped fruit can be taken off

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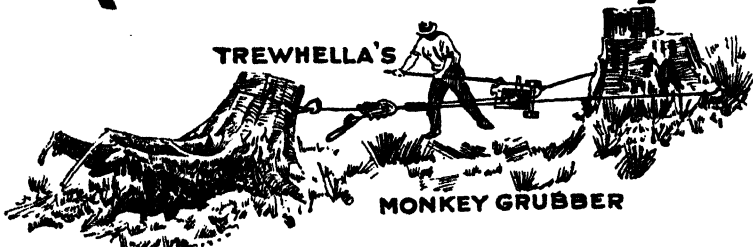
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the rack as soon as the stalks are brittle enough to break up without damaging the fruit. Before taking off the fruit, go along the rack and pick out any bunches which have gone darker than the rest of the fruit. Keep them separate because it does not take many dark bunches to spoil a good color, and a "crown" may be lost by leaving these bunches on the rack and mixing them with good fruit. One layer of hessian will hold two tiers of fruit. Keep the top two tiers separate from the bottom ones. Spread hessians of fruit out in the sun. This is most necessary after removal from racks to take away the greenish tinge. Sultanas require raking over two or three times a day to ensure drying a good, even color. A good implement for this purpose is a wooden rake, or a very serviceable rake can be made by bending pieces of No. 10 fencing wire like a hairpin, and fixing them into a piece of timber about 2in. thick, to which a handle can be fitted. One or two days on the hessian is generally enough to top up sultanas, providing the fruit has been stirred with the rake. Test for dryness in the evening when the fruit has cooled off by taking up a handful and squeezing together as hard as possible. If the berries fall apart when released turn in the hessian and box up early in the morning, providing the fruit is still dry enough. Sultanas require sweating before delivering to the packing shed. Very often the nights turn dewy before the dipped fruits are all boxed up, and to save time turning in the hessians and opening again in the morning, run the hessians which have been used for side curtains over the fruit, but turn the fruit in the night before boxing up. All hessians, other than those required for side curtains and covers, should be cut into convenient lengths, about 10ft. long. In turning in two men catch hold of the four corners and lift. This will run the fruit together and the corners can be turned or folded over the fruit. If ready for boxing, two men can tip this size hessian of fruit quite comfortably into the sweats. The treatment of lexias is similar to that of sultanas, the main difference being the strength of the dip. For Gordos use 1lb. of caustic to 8galls. to 12galls. of water, whilst for Malagas use about 1lb. to 14galls. to 18galls. The cracking is done a little more severely than in the case of the sultanas, but care should be exercised to prevent the fruit being split too severely. After taking all possible care with dipped fruit, a sandstorm is sometimes experienced, and it does not matter what precautions are taken the fruit becomes gritty. If the sanded fruit is washed it will turn out a passable sample. Light the dip again, but do not bring it to the boil, half fill the dip tins and wash them around until every berry has had a good bath, then tip them out on trays or hessian, and in a day's time they will be dry enough again to box. Use the old lye in the dip, for the sugar juice in the lye will give the berries a nice flavor. All fruit should be protected from rain. Where it is being dried on trays, these should be stacked and covered so that rain cannot reach the fruit. Where possible, and as soon as finances will permit, racks should be covered with corrugated iron. Then, when rain sets in, it is only necessary to run on the side curtains. Canvas and hessian covers only last one season, but are better than nothing. Once the fruit is wet it is a very hard job to turn the same into a marketable dried article. A very good cover can be made by using wooden trays. Fix several uprights about 2ft. 6in. above the top tier and run a No. 8 galvanized wire along, also run a wire along both sides of the rack and fix it to the top of the posts, hook the trays over the centre wire by one cleat and bottom cleat on the side wire, then place the other tray with the cleat over the top of the tray already on the rack, and the bottom cleat on the other side wire. Go right along the rack, and it will take 150 trays to cover one 50yds. rack. Run old hessian over the top of the trays and fasten it down to the side wires so that the wind will not lift the trays. This cover will run off a lot of rain."

WYNARKA.

February 11th.—Present: nine members and visitors.

HARVEST REPORTS.—Mr. J. Murphy reported that his best crop of wheat was Buds grown on fallow. Oats grown in rotation had very considerably reduced the harmful effects of "take-all." Oats on the property of Mr. Rackham yielded 25bush. to the acre. They had been manured with 94lbs. of 45 per cent. super

per acre. About 70 acres of the oats were cut for hay and yielded 2 tons per acre. Where 112lbs. super had been applied the crop was 4bush. better than where 94lbs. of super had been used, and where sheep had been grazed there was a marked difference. Mr. L. Henderson reported that the crop put in with plough, drill, and harrows was very much better than that sown with the combine. Mr. Yeats had sown Queen Fan and Buds under the same conditions. The former variety gave better results. Algerian oats on fallow yielded 20bush. Lachlan oats were affected by rust and went down; 85 bags were harvested from five bags of seed. Two bags of Early Burt oats were sown, from which 57 bags were reaped. Abundance returned 7½bush. to the acre. Mr. J. Priest reported that "take-all" was in evidence on the sandy land. Members reported that Bathurst burr was making an appearance in the district.

WYNARKA.

March 11th.—Present: 12 members and three visitors.

FARM MANAGEMENT.—In the course of a paper under the title "Spoilt Land in the Mallee," Mr. J. Rackham considered that about 70 per cent. or 80 per cent. of the land that had been rolled and burned over a period of from five to 10 years in that district, was more or less spoilt. By the term "spoilt" he meant land that would not at the present time produce, after being fallowed, as good or very little better crop than it did the first year that it was brought under cultivation. A farmer was able to put in a crop on new land with a light ploughing, and 60lbs. to 70lbs. super, and reap 10bush. to 15bush. of wheat to the acre. Seven or eight years later, when most of the stumps were removed and the land fallowed, it would not grow a very much better crop than it did the first year. That proved beyond doubt that some serious mistake had been made. The general practice was to roll and burn the scrub, plough the land, sow the seed with about 50lbs. to 80lbs. super, and reap a crop of from 8bush. to 15bush. The stubble was then burnt the next year, the second year the same methods were adopted, and the third year oats were sown. He was of the opinion that the first three years after rolling was the period during which farmers either made or spoilt the land. There was no doubt that the land was spoilt by growing three crops one after the other. Much of the goodness was taken out of the land, and nothing was put back. That was the cause of most of the "take-all" and bad crops that were generally observed. To deal with the spoilt land the speaker suggested the following method:—"Take a block of, say, 1,200 acres, one-half spoilt and one-half standing scrub. The best thing to do with the spoilt land is to leave it alone, as it will not pay for working. If there is good feed on it sheep should be grazed, but if a lot of the soil on which the standing scrub is growing is stony and cannot be worked the best

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plan is to take 300 acres of the most-spoilt land and put sheep on it, and allow no stock of any sort on the other 300 acres for a year. Then burn the grass, even if the rubbish has to be cut with the slasher. In the meantime, roll and burn 250 acres of the scrub, work 150 acres of that as well as possible. Put not less than lewt. high grade super on it with the best seed wheat available. Sow 50 acres each of the following varieties:—Marshall's No. 3, Buds, and Gluyas. If this is done, it will grow 700 to 800 bags of wheat in a normal year. Seeding should be completed by the end of May. Next, plough 100 acres of the best of the old land, and have the work finished by the third week in June. Cart and sell the stumps, then fallow 100 acres of the new land, and finish the work by August 15th. In the meantime, have sheep running on the first fallow, which should be left rough. In October, work all fallow back, giving the old land a thorough working with the harrows. With only 150 acres to strip time will be afforded to again work the old fallow in the summer if there is a fall of rain. Work it back again in April, and sow oats with lewt. super. Sow wheat on the new land that has been fallowed, and apply lewt. super. As soon as that is finished, fallow another 100 acres of old land and the 150 acres of second year's ground for wheat. If this is done, it will not be long before good crops will be grown, and there will be no 'take-all,' and the block will be in good heart. Always remember four things must go hand in hand—fire, fallow, super, and sheep. The first three are easily obtained, sheep may take time, but they should be obtained as soon as possible. Always apply plenty of super. If an insufficient quantity is applied, the plants will only be fed whilst they are green. They will take all the super they can and leave none for the grain. This is why so many of the crops in this district do not reap as well as they look. The time has arrived when the farmers must have more fallow, more super, and better organisation to get down to smaller acreages, and work the land with better methods."

BARMERA, February 9th.—Thirty members and visitors attended the February meeting, when an address, "Trays v. Racks," was given by Mr. F. Olorenshaw, of Denmark.

BRINKLEY, March 7th.—Mr. S. White delivered an interesting address, "My Life and Experiences on the Farm."

CLANFIELD, February 5th.—Twenty members and 25 visitors attended the February meeting, which took the form of a social evening. Addresses were given by Mr. R. Hill (Agricultural Instructor) and Mr. F. C. Richards (Assistant Secretary of the Advisory Board of Agriculture).

MONARTO SOUTH, March 5th.—Twenty-one members attended the March meeting, when Mr. S. R. Cockburn delivered an address, "Top Dressing Pastures."

PINNAROO (WOMEN'S), March 6th.—Mrs. Sands read a paper from the *Journal of Agriculture*, "Women's Work in New Zealand."

WILKAWATT (WOMEN'S), March 17th.—Ten members attended the March meeting, when the subject "Sauce and Pickle Making" was discussed. Several members brought recipes and exhibits of sauces, &c.

On page 681 of the February issue of the *Journal of Agriculture* it was reported that Mrs. Pritchard read a paper, "The Ideal Kitchen." This paper was written by Mrs. H. L. Billing.—[Editor.]

SOUTH AND HILLS DISTRICT.

BLACKHEATH, March 6th.—The evening was devoted to a discussion on items of interest connected with the past harvest. It was mentioned that Ford was proving a good all-round wheat for the district. Buds gave good returns, but was a tough wheat for thrashing. Onas, although somewhat touched with blight, yielded satisfactory returns. Caliph was mentioned as being an excellent hay wheat. This variety when reaped only gave a light yield. Currawa weighed well, but was badly affected with smut.

CURRENCY CREEK.

March 6th.—Present: 14 members and visitors.

THE IDEAL FARM.—Mr. J. S. Green, who read a paper dealing with this subject, expressed the view that a farmer who occupied from 400 acres to 500 acres of land should endeavor to manage as many side lines as he possibly could in order to make the holding a paying proposition. A farm of 500 acres should be divided into 10 or 12 paddocks. Two should be 100 acres in extent, three of 50 acres, and three of 25 acres, whilst the remaining portion of the land should be cut up into small paddocks about the homestead. He suggested sowing 100 acres of wheat and 50 acres each of oats and barley. One hundred acres would be put under fallow and 200 acres could then be used for grazing. All fences should be sheep proof, and one small paddock should be made pig proof. The land should be able to carry at least 150 Merino ewes, and if lambs were to be fattened for market the ewes should be mated with a Shropshire ram. Some of the small paddocks should be sown with green feed to provide early feed for the ewes and lambs. As to cattle, he recommended milking Shorthorns. Lucerne and Sudan grass should be sown to provide summer feed for the cows. Pigs would be necessary to consume the by-products from the dairy, and he favored a Berkshire sow mated with a desirable type of boar. For poultry he recommended the Rhode Island Reds. They were good layers and excellent table birds. The farm improvements he thought should consist of a good stone house, an underground tank, and a well with a pumping plant for watering stock and irrigating crops. Eight stalls should be erected in the stables. The chaff shed should be capable of holding 20 tons to 30 tons of chaff and be placed to one end of the stable with a passage leading along the front of the manger to facilitate feeding. All implements and vehicle sheds should be built with iron and stone. A flower garden and lawn laid out in front of the house, and a small orchard would add very considerably to the appearance of the homestead. Mr. P. Plummer, in discussing the paper, thought that land which was worth £25 per acre was too valuable to be allowed to remain for a year as bare fallow. He suggested sowing rape and feeding it off.

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HARTLEY (Average annual rainfall, 15in. to 16in.).

February 11th.—Present: 10 members and visitors.

FARM MANAGEMENT.—In the course of a short paper under the heading "Too Many Irons in the Fire," Mr. H. H. Cross said it was a noticeable feature of many holdings that the farmer endeavored to manage too many side lines. The best plan was to have a few side lines and give them proper attention. Wheat-growing was the principal form of agriculture carried on in that district, and he admitted that that one occupation was not sufficient on farms of a small area. Sheep coupled with wheatgrowing, he considered to be the best method of farming for the southern districts, and if the farmer gave his whole attention to those operations he believed the land would be used to the best advantage. An interesting discussion followed.

MILANG.

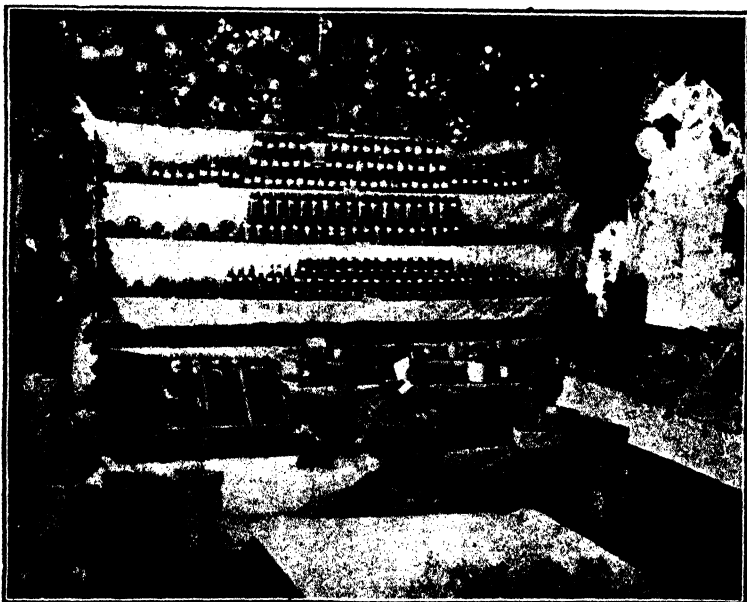
February 14th.—Present: 17 members.

INCREASING THE STOCK CARRYING CAPACITY OF THE FARM.—In the course of a paper dealing with this subject, Mr. S. H. Goldsworthy said pasture lands could be divided into two kinds, "stale" pasture and "fresh" pasture. A "stale" pasture was one that had not been turned up for, say, four years or more, and a "fresh" pasture one that had been broken up within two years or three years. Stale pasture would keep stock in store order, and in some instances carry a fair number, but it would not fatten stock. It was a good plan to have a portion of the farm "stale pasture," because this was most useful at the commencement of the season. Paddocks of stale pasture were good for ewes during lambing season, because the land usually carried some dry grass, and it was possible to hand feed the stock whilst the feed in the paddocks that had been cultivated was growing. Cultivated paddocks were often very bare during April and May, but the feed would come away very quickly in those paddocks if given a spell, and they were one of the mainstays during the winter months. If farmers were to make full use of the grazing it was necessary to have some kind of feed in reserve to feed over a couple of months. Should the season be late, a critical time would be experienced if no provision had been made. Some people advocated reserve stacks of hay, and whilst that was a good plan, he thought oats a splendid provision as a standby. Oats could be fed to sheep with chaff or put out in troughs or on the ground. He usually refrained from selling oats until he was able to gauge what the season would be. If prices were high one was tempted to sell them earlier in the season. He suggested sowing 50 acres of a cereal crop for feed purposes. The green feed could be grown on some land that did not carry a good growth of natural pasture. For instance, a paddock badly infested with stinkwort would grow very little grass during the following winter. If that land could be turned up when the weeds were young, worked and cropped, feed would be available in the winter when otherwise there would be none. Oats and barley were a good mixture to sow for feed purposes. Barley came away quickly and provided good, early feed. Oats would come on later, and, if not overstocked, would make fresh growth in early summer. He usually pastured 200 ewes to 250 ewes and lambs on 50 acres in the middle of June and left them there for one month, and then gave the paddock a spell. As the feed made fresh growth the sheep could be put back into the paddock again. Another good plan was to "top dress" grass land. Although he did not think the land adjacent to the lake would respond to top dressing as well as the land further back, fertiliser applied whenever dandelion made a strong growth would give good results. Some of the scrub land that was bare during the winter would produce good feed during late spring. If possible, advantage should be taken of that feed, and some of the better feeding land could be given a spell. After being on a property for some years the owner should have some idea of what stock could be carried with any degree of success. The carrying capacity should be increased gradually, because if the land were overstocked losses would be heavy. The farmer should aim at always having plenty of feed during the spring of the year. If stock put on condition during the spring they would keep fat during the summer, and be able to withstand a trying time if it were experienced.

MOUNT BARKER (Average annual rainfall, 30.75in.).

February 4th.—Present: 30 members.

THE IDEAL COW FOR THE HILLS.—Mr. B. Stephenson, in the course of an address on this subject, said the Hills districts with the sudden changes of climatic conditions and cold, long winters demanded a good constitution and a keen appetite, which made it possible for the cow to get the most out of the food consumed and to get the greatest return for the money expended on her. He then described the type of animal suitable for the Hills conditions, and expressed the opinion that the pure bred Jersey, or one graded up to as near pure as possible, would meet all requirements. So far as the constitution of the breed was concerned he was of the opinion that the Jersey could hold its own against all other breeds if given reasonable care and attention. An objection raised was that after the Jersey had finished her milking career she would not realise a good price if sold to the butcher. Allowing that argument to be correct, the difference in the price realised between the Jersey and a cow of one of the heavier breeds



First Prize Exhibit Staged at the Meadows Show, 1925, by the Kangarilla Branch of the Agricultural Bureau.

was easily counter-balanced by the extra amount the Jersey brought in at the beginning of her lactation period. Mr. J. Wilson said the dairy Shorthorn was a breed that could adapt itself to any climate, and by careful selection and testing it would equal any other breed. The cows were heavy and consistent milkers, and apart from their milking qualities, the dairy Shorthorns were recognised as the best beef cattle on the market. That meant another source of revenue, and the calves always sold at top prices when placed in the market. Mr. L. Cowan, B.Sc. Agric. (Chairman of the Branch and a member of the Advisory Board of Agriculture) spoke in favor of the Jersey. He held the opinion that one must breed either for milk or beef.

At a meeting of the Branch held on December 10th, 1924, Mr. K. Serymgour read a paper, "Experiences with a Tractor," and an instructive discussion followed.

RAPID BAY.

February 14th.—Present: 25 members and two visitors.

ROTATION OF CROPS.—Mr. C. W. Ness, in the course of a paper dealing with this subject, said rotation of crops presented many advantages to farmers who sought the highest possible returns from the land. A regular rotation implied order and foresight, instead of haphazard methods of farming. Another practical advantage was the intermingling of crops that could be harvested off the land with those that could be grazed. The staple crop would, without doubt, be wheat for either grain or hay. There were a number of rotations that could be adopted, but it was necessary to consider which would be most suitable for the climate, rainfall, and soil. The first two-course rotation would be that of bare fallow-wheat; a crop of wheat every second year. Under that system more wheat could be grown on a given area than under any other rotation, but it could not be recommended for that district, seeing that most of the wheat grown was for hay. Another rotation was that of fodder crop-wheat. The high price ruling for livestock was an inducement to many to consider how to eliminate the year lost by bare fallow. Under the latter rotation he suggested fallowing the land in July or August, working it down in the early part of October, and sowing Sudan grass, rape, or sorghum, or other summer fodders, and feeding off the crop during summer. That rotation in a dry district had a detrimental effect to the extent of about 4bush. on the following wheat crop as compared with bare fallow-wheat rotation, but notwithstanding that he thought that rotation could be recommended for their district. Bare fallow-wheat-pasture was a rotation that was in vogue throughout Australia where wheat was grown, and was considered to be one of the most reliable systems of farming. The year devoted to pasture was not a profitable one in districts where the land was not grassed, but in a district like theirs, where soft feed grew well on stubble land, the system had a decided advantage over that of the bare fallow-wheat rotation. In wet districts a fodder crop could be grown in place of the year of pasture. Another rotation was fallow-wheat-barley. With that two crops could be gathered for each year of fallow, and although barley was a "surface" robber it could be profitably grown, providing there was a year of fallow between it and the next wheat crop. A rotation of fallow-wheat-oats commended itself even more strongly than the fallow-wheat-barley rotation. Oats could be grown as a second crop with a decided advantage, particularly where "take-all" was prevalent, and then if the land were to be left as pasture the following year, the oat stubble would produce excellent feed. Still another rotation was peas-wheat, and it was increasing in favor each year. If wheat was sown as a hay crop, that rotation could be followed for a number of years, providing the land did not become too dirty with wild oats and weeds. Their district was particularly suited for that rotation, because they had a very mild summer and an absence of hot north winds. Again, the pea crop could be profitably harvested and could be fed either to sheep, lambs, or pigs. He had proved the feed value of peas fed to pigs to be up to £12 per acre. One method of farming that should be given more attention was growing cereals for green feed. Both oats and barley could be grown and fed in the green stages with profit to the grower, and at the same time the productivity of the soil would be increased.

STIRLING.

March 7th.—Present: 11 members.

PROPAGATION.—Mr. A. Gander, who read a short paper dealing with this subject, said plants could be propagated either by seeds, dividing roots, layering, cuttings, budding, and grafting. Mr. Gander explained the various types of plants—annuals, biennials, and perennials. He also exhibited different kinds of wood to illustrate the various methods of making cuttings, at the same time explaining the best wood to use for the different varieties of plants.

BALHANNAH, March 13th.—A paper, "Co-operative Marketing and Selling," was read by Mr. W. Rollbusch, and a keen discussion followed.

BLACKWOOD.—Fourteen members attended a meeting held on February 9th. Mr. R. Fowler (Manager of the Blackwood Orchard) read a paper, "The Abscession of Flowers and Partially Developed Fruits of the Apple." A good discussion followed.

CHERRY GARDENS, March 10th.—The meeting took the form of an "Exhibit Night." Samples of produce grown in the district were tabled and an interesting discussion was aroused. Several members stated that they intended sowing small areas of land with subterranean clover.

KANGARILLA, February 6th.—Mr. E. Butler read an article from the *Journal of Agriculture*, "Hay Making," and an interesting discussion followed. Twenty members attended a meeting held on March 6th, when Mr. R. Cockburn delivered an address, "Top Dressing Pastures."

LONGWOOD, January 31st.—On January 31st, members of the Longwood, Clarendon, Ironbank, Cherry Gardens, and Kangarilla Branches, in company with a number of visitors from Adelaide, and under the guidance of Mr. Geo. Quinn (Horticultural Instructor), Mr. R. Fowler (Manager of the orchard), and Mr. C. H. Beaumont (Orchard Inspector and Instructor) made a tour of inspection of the Blackwood Orchard. Short addresses were given by Mr. Quinn and Mr. Fowler, and afternoon tea was provided by the ladies.

McLAREN FLAT, February 5th.—On the occasion of the annual meeting the Hon. Secretary (Mr. C. Robertson) read a report on the work of the Branch during the past year. There was an excellent attendance of members, visitors, and delegates from neighboring Branches. The meeting concluded with musical items, supper, and dancing.

PENNESHAU, March 9th.—Several subjects of local interest were brought before the meeting and an interesting discussion took place. Members decided to sow a number of grass and fodder plants in order to prepare an exhibit for the 1926 Kangaroo Island Conference, which is to be held at Penneshaw.

PORT ELLIOT, February 21st.—Mr. S. R. Cockburn delivered an address, "Top Dressing Pasture Lands," to a gathering of nine members and 12 visitors.

STRATHALBYN, February 10th.—Twenty-three members attended the February meeting, which was devoted to a review of the past harvest. It was reported that take-all had been very prevalent in some of the crops. Currawa gave the best wheat yields, 40bush. to the acre having been harvested by some of the members. Peas yielded 12 bags to the acre.

SOUTH-EAST DISTRICT.

TANTANOOLA.

March 7th.—Present: 11 members.

The Hon. Secretary (Mr. R. Campbell) read a paper, "Tomato Growing," in the course of which he stated that there were hundreds of acres in that district suitable for the crop. Seeing that city factories were too far distant he suggested the establishment of a small pulping or processing plant to assist the industry, for he believed there was a possible trade in 45lbs. tins of fruit, as was done in Victoria. The writer stated that from about one-twentieth of an acre of land he had gathered 1,500lbs. of tomatoes, and the crop was not yet exhausted. He also suggested that the growers should combine and form a co-operative society and run the factory themselves. Mr. Campbell also brought under the notice of the meeting the losses that barley growers suffered through the depredations of sparrows. Mr. P. Seebohm had been most successful in destroying sparrows with rabbit poison. A tin of poison was sufficient to treat about 1bush. of

oats, and these should be sown after the drill. Mr. H. Smith tabled samples of green stem marrow kale and mangolds. Both plants had been grown in sandy soil and had made very favorable growth. Members also discussed the subject, "Subterranean clover." An instance was quoted in which the crop had been sown on fern lands, where it was making good growth, and it was thought that when the clover was opened for grazing stock would soon tread out the ferns.

KALANGADOO.—February 14th.—The meeting took the form of a "Question Box" evening. A number of subjects of local interest were brought forward for discussion.

KALANGADOO (WOMEN'S), February 14th.—Miss Bennett read a paper, "Care of Growing Children," and a good discussion followed.

MOUNT GAMBIER, February 14th.—A paper, "Fruit Drying," was read by Mr. H. H. Orchard (Orchard Instructor and Inspector for the South-East).

Two a Month

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THE JOURNAL

OF THE

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OF SOUTH AUSTRALIA.

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All communications to be addressed:
"The Editor, Journal of Agriculture, Victoria Square, Adelaide."

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T. BUTTERFIELD,
Minister of Agriculture.

POINTS FOR PRODUCERS.

Colic and Stoppage of the Water.

To a correspondent who wrote asking for a remedy for horses suffering from flatulent colic and stoppage of the water, and whether it was possible for a horse to become ruptured by an acute attack, the officers of the Stock and Brands Department supplied the following:—

Flatulent colic and stoppage of the water are two separate and distinct conditions, though the latter may often arise in conjunction with the former and as the result of it.

Causes.—There are numerous conditions or circumstances which will produce flatulent colic, and they are connected with irregularities of feeding and watering. It may arise out of administration of foods of a succulent nature if given in unusually large quantities to animals not accustomed to them. Damaged and mouldy foods are sometimes causes of flatulent colic. It may also arise from giving the animal a full drink on top of a grain feed. Any conditions which produce arrest of bowel movements may cause it, *e.g.*, twist of bowel, defective intestinal secretions, and loss of tone of bowel wall.

Stoppage of water, when it occurs, is usually a secondary condition to colic, and arises out of the fact that the horse frequently finds it easier to hold back his urine for the act of staling tends to increase the already existing abdominal pain, and he refrains from passing it. Horses do not suffer from primary water stoppage anything like so frequently as horseowners commonly believe, and their usual diagnosis of the case as being one of "stoppage of the water" whenever their animals go down with symptoms of abdominal pain is frequently a wrong one. They are usually up against a case of true bowel colic, which is the condition that calls for treatment.

Whether there is any stoppage of the water present or not may be easily and clearly determined by passing the greased hand into the hinder bowel. Having removed the dung, press down with the palm of the hand, and the bladder may be readily felt as a round ball lying on or just in front of the brim of the pelvis. If it is the size of a football, then a water stoppage is present and requires attention. If the bladder is only the size of a large orange, no stoppage is present. (In the mare, examination of bladder is done through the lower passage.)

Treatment.—For flatulent colic: Give at the outset raw linseed oil, 1½ pints; turpentine, 2oz.; spirits ammon. aromat., 2oz. (or household ammonia, 1 teaspoonful). If this does not afford relief, and pain continues to be severe, chloral hydrate (1oz.) in cold water may be given as a drench. The use of tinct. opium (or laudanum) is not recommended, as while it may temporarily ease pain, its ultimate effects may be harmful, as opium tends to arrest the bowel movements. Supplement this treatment by back-raking, massage of flanks and abdomen, and the administration at intervals of enemas of warm soapy water.

To remove any water stoppage, massage the distended bladder with the hand through the rectum and apply hot fomentations to the part just below the rectum. This will usually result in a short time in the

animal passing his urine. If not, while the animal is recumbent, draw the penis out of the sheath, place a small funnel in the opening of the pipe, and pour in a pint of warm water. This as a rule is effective unless the stoppage is due to a stone blocking the passage, in which case early operation by a skilled practitioner is the only resort.

In the mare, if urine is retained, the greased hand may be passed into the vagina (or lower passage) and two fingers inserted in the urethra, the opening of which is found on the floor of the vagina a few inches from the external opening. This will cause the urine to flow freely. Do not, in any case of water trouble, use pepper and onion, as is so frequently done. It is cruel and harmful.

An animal might possibly become ruptured owing to a violent attack of windy colic. If remedies fail to give relief in windy colic, puncture of the flank can be resorted to as a last resource only. The point of puncture is on either flank, according to which is more distended, and at a point as near as possible equidistant from last rib and point of hip and backbone. A special instrument (trocar and canula) is necessary, and scrupulous care as to cleanliness of operation must be observed. Unless this operation is performed carefully and by a skilled veterinary surgeon, it is almost certain to be attended with fatal results.

Dry Copper Carbonate for "Bunt."

The use of dry copper carbonate in place of the well-known bluestone pickle or formalin treatment for "bunt" in wheat has received much prominence during recent years. The Department of Agriculture is submitting the matter to field test. Needless almost to say, such an undertaking involves a considerable amount of time, and the Department's investigations are as yet by no means finalised. However, the results received to date, reinforced by the experience of other countries, are sufficient to warrant an opinion that the "dry" copper carbonate method is as effective as other treatments in cases in which "bunt" infection is not very bad. The facts that the "dry pickle" does not retard the germination of grain, nor does it destroy a percentage of grain, as other treatments sometimes do, justifies the use of copper carbonate in relatively "bunt" free seed. Badly infected seed, however, should be treated either with bluestone or formalin, both of which are more effective under such circumstances.

Rates of Seeding Wheat.

Since 1918 a series of tests designed to determine the relative value of different rates of seeding wheat have been conducted at the Government Experimental Farm, Minnipa. Plots sown with seed at the rate of from 30lbs. up to 90lbs. have been under observation, and the mean yields for the seven years indicate that 30lbs. of seed is inadequate. The best business proposition appears to be seeding at the rate of 75lbs. per acre, as will be gathered from the fact that during the period 1918-24 a 30lbs. seeding returned 11bush. 28lbs.; 40lbs., 12bush. 14lbs.; 50lbs., 12bush. 22lbs.; 60lbs., 12bush. 59lbs.; 75lbs., 13bush. 36lbs.; 90lbs., 13bush. 42lbs.

INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

[Replies supplied by Mr. ALAN H. ROBIN, B.V.Sc. (Govt. Veterinary Officer, Stock and Brands Department).]

Hon. Secretary, Roberts and Verran Agricultural Bureau, reports mare which scalds badly both in saddle and collar.

Reply—Try washing the shoulders with a fairly strong watery decoction of wattlebark, or a strong solution of salt and water, or alum water. This will tend to harden the skin of the parts.

"D. G.," Kapinnie, reports cow with swollen jaw.

Reply—Grass seeds may be the cause of the swelling. Try hot fomentations to see if the swelling will come to a head and soften. If so, it could be lanced, and the abscess cavity syringed out with weak antiseptic.

[Replies supplied by Mr. C. McKENNA, B.V.Sc., M.R.C.V.S. (Govt. Veterinary Officer, Stock and Brands Department).]

Hon. Secretary, Agricultural Bureau, Elbow Hill, asks what is the cause of sheep becoming filled with water, which is outside the stomach.

Reply—The condition appears to be dropsy. Where a number of sheep are similarly affected, this effusion is usually due to parasitic infection. You can verify this by a careful examination of the fluid contents and lining of the fourth or true stomach which lies behind the bible. The worms are 1½ in. to 1½ in. long and as thick as a pin. Treatment for the dropsy consists in removing the worms from sheep and cleaning them off the pastures. This can be done by regular monthly drenching of the flock with a solution of bluestone made up as follows:—Dissolve ½ lb. pure bluestone (no white patches) in a pint of boiling water and add 3 galls. of cold water. The dose of this is:—1 oz. for lambs and 3 oz. for sheep over 12 months. Fast flock 24 hours before and 24 hours after dosing, and they must have no water during fast. Also supply following lick to sheep:—50 parts each of ground bonemeal and common salt, 3 parts each of powdered sulphate of iron and powdered gentian root.

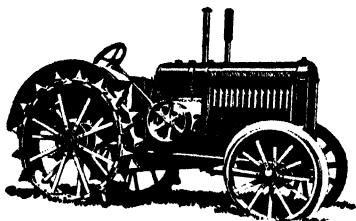
Hon. Secretary, Rapid Bay Agricultural Bureau, asks what is the cause of cattle chewing bones and sticks during dry period of the year.

Reply.—Bone-chewing is an indication of phosphorus deficiency in the body. As cattle naturally obtain this mineral from the food they eat, it follows that the forage grass, &c., supplied to them have not enough phosphorus in their composition to supply the animal's wants. The condition is worse during the dry period as food is scarce and poor in quality. In other words, there is less phosphorus available for the cattle. Phosphorus deficiency in cattle means to the farmer poor milk yields, weak calves, late maturity of young stock, and "scrubby" cattle. Further, it is responsible for several diseases of cattle. In the same way as crops are guarded against a phosphorus deficiency by dressing with superphosphate, so cattle and all stock should be supplied regularly with bonemeal to supply the phosphorus lacking in the soil. The dose of bonemeal for

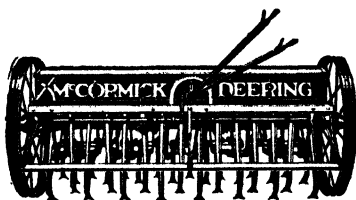
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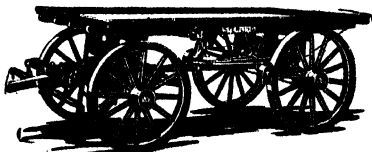
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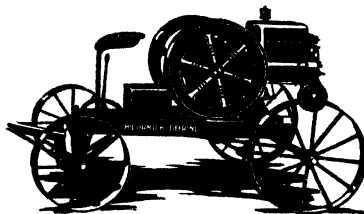
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"bone-chewers" is:—1oz. per day for calves up to 1½ years; 2oz. to 3oz. for rest of growing period; 1oz. for grown cattle; 5oz. to 8oz. for dairy cows, according to yield of milk. The bonemeal should be sweet and finely ground, and can be fed along with the feed or as a lick. As a preventive measure the bonemeal should be given at least three times weekly in doses as above.

Hon. Secretary, Shoal Bay Agricultural Bureau, Kangaroo Island, has mare with foal at foot. The mare has worms, and the inquirer wishes to know if the mare should be treated before foal is weaned.

Reply—As you will be weaning the foal in a short time, I would advise waiting until then before treating the mother. Treatment consists in raw linseed oil 1 pint, turpentine 2oz., thoroughly mixed together and given as a drench after a fast of 18 hours. Follow by a course of powdered nux vomica. The dose is a teaspoonful morning and evening, and should be given for 10 days, stopped for five, and repeated for a further period of 10 days. Mix with treacle to form a paste, and smear over tongue and back teeth.

"Baxie," Morphett Vale, has horse rising eight years, heavy drinker, rough coat, poor condition, urine thick.

Reply—Bring the horse in from the paddock and stable it at night. Commence treatment by giving a drench of raw linseed oil 1 pint, turpentine 2oz. Shake thoroughly before giving. Obtain from the chemist 1½ doz. of the following powders:—Pulv. nux vomica 1 dram, pulv. gentian root 3 drams. Give one powder night and morning a little before feeding. The most satisfactory way to administer is to mix powder with a little treacle to form a paste. This is then smeared over tongue and back teeth with a flat smooth piece of stick. Feed regularly on good quality chaff and bran. Let horse have as much clean, fresh water as it wants. A daily grooming will considerably help to improve his appearance.

Hon. Secretary, Agricultural Bureau, Winkie, reports:—(1) Two horses losing condition, sluggish, and rough coats. (2) Horse slobbers.

Reply (No. 1)—Starve the horses for 18 hours, and then drench each with the following mixture:—Raw linseed oil 1½ pints, turpentine 2oz. Shake thoroughly before giving. Obtain from chemist 1lb. of powdered nux vomica, and give each horse a teaspoonful morning and evening for 10 days, stop for five days, then repeat for another 10 days. The powder is best given with treacle to form a paste, which is then smeared on the tongue and back teeth with a flat stick. Give horses a rest for seven days from time of drenching. Hay should be of good quality, and whilst working supplement with a little whole oats and bran.

(No. 2.) Make a careful examination of the mouth, as the symptoms point to dental irregularities, and if present they should be attended to. Try the treatment recommended for query No. 1.

"W. H. C." Lower Mitcham, has cow giving thick, lumpy milk from the two back teats. The udder is hard.

Reply—The cow has mammitis in both hind quarters. Isolate her from the other cows, and preferably away from the milking shed. Give a drench of Epsom salts 1lb., ginger 2oz., treacle ½lb., dissolved in 2 pints of warm water. Treat affected quarters with frequent hot fomentations, followed by massaging with warm camphorated oil. Further, strip them five to six times daily and destroy milk. After attending to cow, wash hands in disinfectant. I would not recommend use of milk from other quarters until inflammation has subsided.

"E. M.," Meribah, reports:—(1) Horse with open wound on inside of hock discharging matter. Horse very stiff and almost unable to walk. (2) Is it advisable to feed smutty wheat to pigs?"

Reply (No. 1)—Wounds in the region of the hock are always serious, and if joint capsules have been penetrated, there is little chance of recovery. Try the following treatment:—Sling the animal if possible. Clip hair around wound, and wash part thoroughly with some antiseptic solution, e.g., lysol. When dry, apply a blister to swelling of biniodide of mercury 1 part, lard 8 parts. Rub paste in thoroughly. The following day wash off with some warm antiseptic solution, dry, and rub in olive oil. The wound should be kept clean by regular washings with antiseptic, and then lightly bandaged.

(No. 2.) I do not recommend use unless short of feed. In this case, boil screenings before feeding to pigs. Give in small quantities and mix with other feed.

Hon. Secretary, Agricultural Branch, Pygery, reports horse discharging offensive smelling matter from the nose.

Reply—The condition is one of chronic catarrh, and the bad smell points to a diseased condition of the bones at the back of the nostril. This could only be relieved by an operation performed by a qualified veterinary surgeon. Try inhalations of steam, medicated with eucalyptus, and put in a handful of Epsom salts in feed night and morning.

ORCHARD NOTES FOR SOUTHERN DISTRICTS, MAY, 1925

[By C. H. BEAUMONT, Orchard Instructor and Inspector.]

The work to be done this month will necessarily depend very much on the weather.

Pruning can, of course, go ahead; the stone fruits first and the pip fruits after; vines all the time until completed. The trees in bearing will, generally, need only light pruning. Trees being formed must be pruned to give them strength and shape, but do as little cutting as possible. Split limbs can sometimes be mended up with a few light nails or with a light bolt. Care must be taken to trim up all broken ends so that they will heal, thus preventing disease taking hold.

Planting must go ahead as soon as the soil is in good state, damp and friable. Discontinue if the soil becomes wet. All young trees need a stake for support.

Young citrus trees must be watered if the rain be delayed. The older trees must be watched for brown rot. Spray with Bordeaux, and cut away the lower limbs; a mulch will help in preventing an attack of brown rot.

Scald all trays used for drying and clean the racks. Do away with all the waste fruit; burn it or bury it deeply. This helps to check fungus pests.

Implements for soil working should be in good order; stopping for repairs is a costly business.

Fruit in cool store needs attention. If you have packed direct from the tree it will pay to grade now and sell the culls. The culls have a value now and there will be less cost for storage.

Ploughing may start as soon as possible to the rows, leaving the centre furrow to carry off surface water. Main drains should be ready to take all flood waters.

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AGRICULTURE AT THE EXHIBITION.

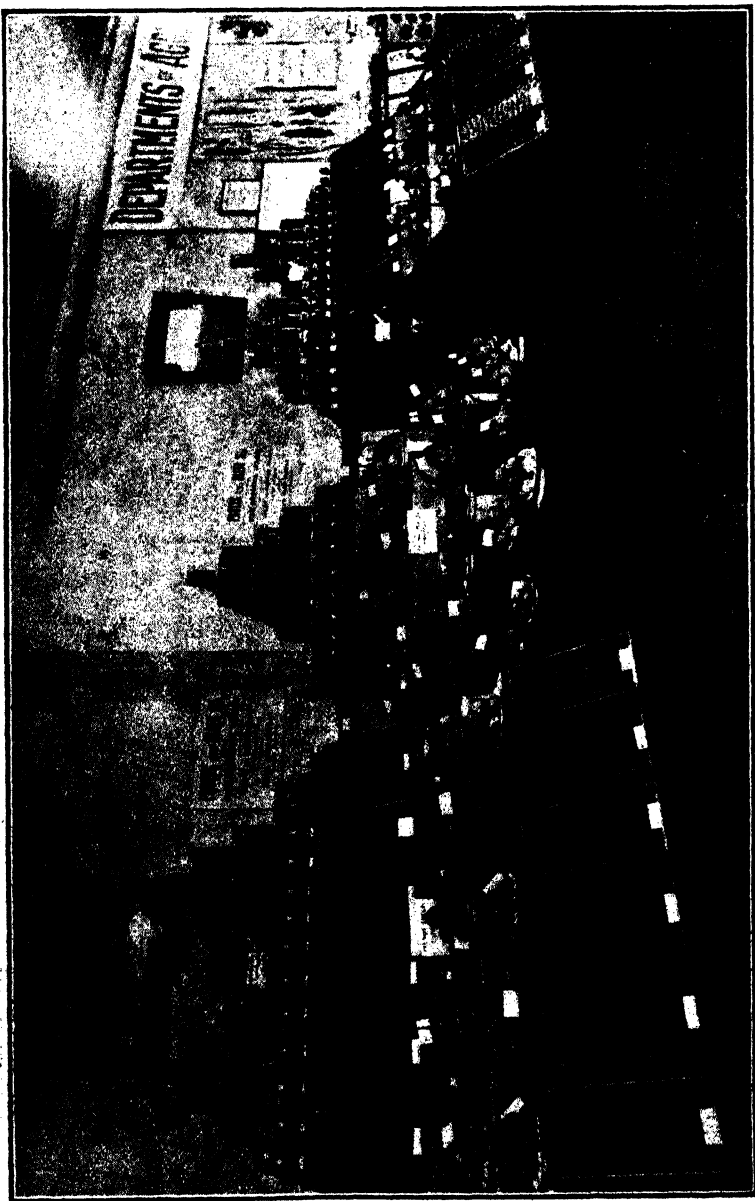
The agricultural exhibit at the All-Australian Exhibition has proved an attractive feature to country men and city dwellers alike. With generous assistance from other departments and private individuals, the Department of Agriculture has set out to show, in a measure, the achievements and the possibilities of primary production in South Australia.

In the basement of the Exhibition a series of stands has been erected. Three of those carry displays of fruit and fruit products; one is devoted to fungus pests and diseases of plants; one to tobacco; one to cereals.

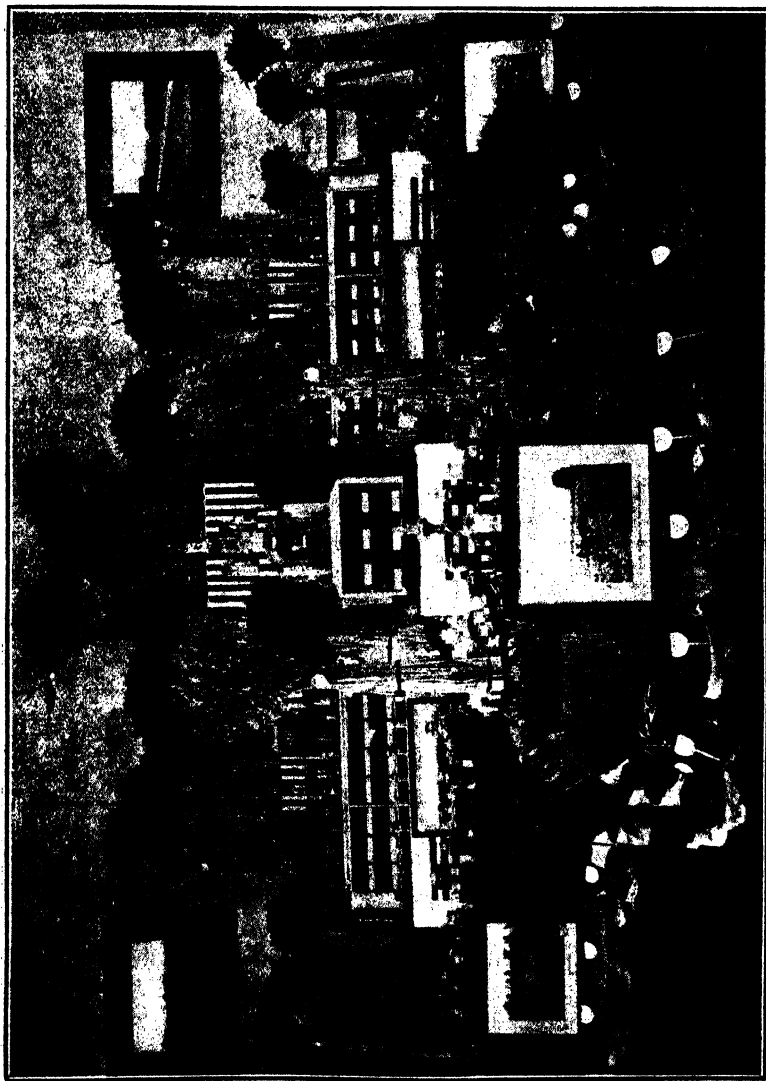
Roseworthy Agricultural College is represented by an exhibit staged on the main floor of the building. The greater part of the exhibit is the produce of the various Government Farms and Orchards. Contributions from other sources include a display of beet sugar from Maffra, Victoria, made available through the courtesy of the Department of Agriculture of that State; tobacco, made available by the British-Australian Tobacco Company; photographs and 60-year-old wheat, Mr. E. R. Emery; photos. of modern agricultural implements and machines, the S.A. Farmers' Union; subterranean clover, Mr. C. Howard; wool from the School of Mines and Industries; and superphosphate samples, Adelaide Chemical and Fertilizer Co. Limited. All these have contributed very materially to the success of an exhibit which has created no little interest amongst visitors to the Exhibition.



Tobacco, forming part of the Exhibit of the Department of Agriculture at the All-Australian Exhibition.



Fruit Section of the Exhibit of the Department of Agriculture at the All-Australian Exhibition.



Cereals and Grains, Department of Agriculture's Exhibit at the All-Australian Exhibition.

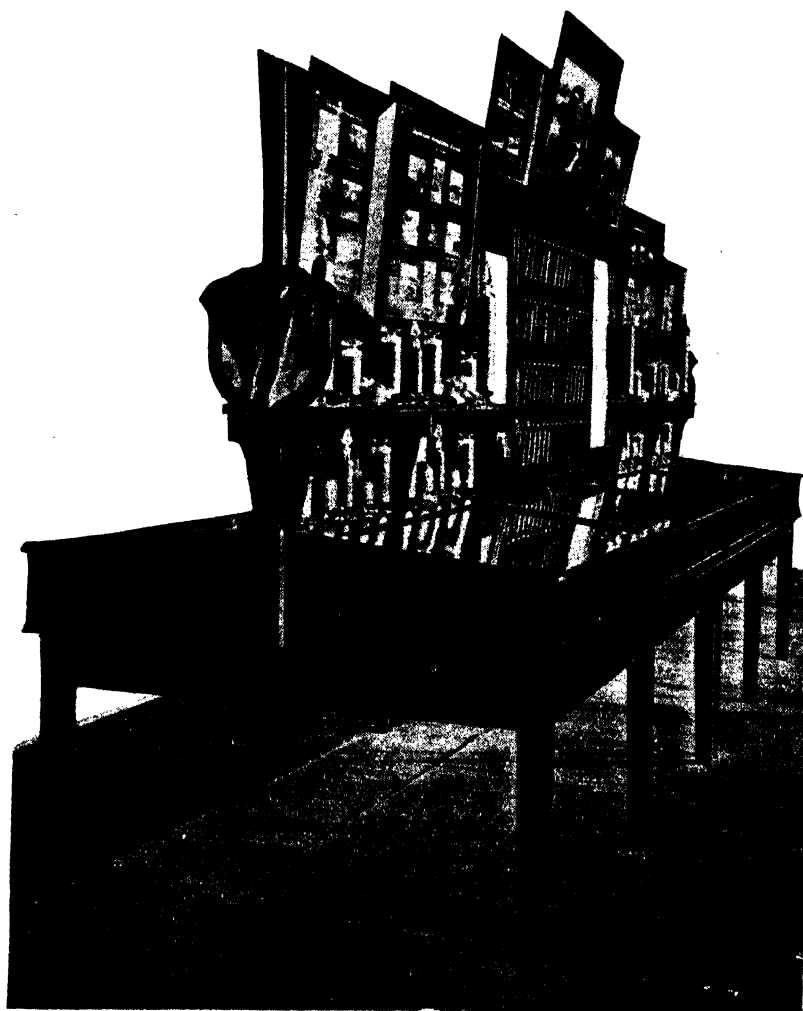


Exhibit Staged by Roseworthy Agricultural College at the All-Australian Exhibition.

INDEX JOURNAL OF AGRICULTURE.

The Department of Agriculture is anxious to secure for the Waite Agricultural Research Institute copies of the index to the *Journal of Agriculture*, volumes 7, 8, 11, 13, 15, and 16. If any reader should have a copy of one or other of these, and is prepared to make it available to the Institute, the Department will be grateful if he will address it to the Editor, *Journal of Agriculture*, Adelaide.

ROSEWORTHY AGRICULTURAL COLLEGE HARVEST REPORT, 1924-1925.

[By R. C. SCOTT, Experimentalist, and E. L. ORCHARD, Farm Superintendent.]

Owing to the temporary absence of the Principal, the task of recording the results of the College harvest has devolved upon us. By comparison with other years we find that the 1924 season was below the general average, although the differences in some instances are relatively small. The wheat yield was seriously depleted by an unusually virulent attack of red rust (*Puccinia graminis*), but even before the appearance of this parasite the crops were below standard in consequence of unfavorable weather conditions. The factors that contributed to this result were as follows:—

1. The exceedingly wet winter of 1923 delayed the lifting of the fallows, some of which were ploughed late in the spring after the land was out of condition for such tillage. This led to poor physical texture and a lack of firmness in the seedbed.

2. Further, this defect favored the appearance of take-all and white heads (*Ophiobolus graminis*) in the crops raised on the late fallows, and an appreciable loss of both grain and hay.

3. The chief feature of the 1924 season that militated against high returns was extremely cold, dry weather in the month of July. The rainfall was only 0.41in., spread over 12 days, as against a normal precipitation of 1.92in., and no less than 11 frosts were recorded. Useful rain fell in August and September, but even so low temperatures were very frequent, no less than 17 frosts being registered in those two months. The effect of these untoward conditions was to thin out the crops, retard severely their normal growth, and thereby handicap them in their competition with the hardier types of weeds.

Against these difficulties the crops struggled on, and in the spring they gave promise of yielding returns little, if any, below the normal; but the moist atmospheric conditions that prevailed in October and November gave impetus to the fungoid parasites that are always in evidence more or less at that period of the year, and in consequence our harvest was reduced appreciably below expectations.

The discrepancies between 1924 yields and the average returns are indicated in the appended statement (Table I.).

TABLE I.—*Showing Crop Returns for 1924 Comparatively with Mean Yields.*

Crop.	Period	Mean Yield.		Average Yield, 1924.	
		Bush. lbs.		Bush. lbs.	
Wheat	1904-1923	17	36	12	17
Barley	1904-1923	28	21	26	39
Oats	1905-1923	23	37	23	30
Pease	—	—	—	14	17
Hay	1904-1923	T. 2	C. 1	L. 23	T. 1 C. 13 L. 70
Ensilage	1905-1923	6	14	61	3 16 104
Berseem	1912-1923	29	17	49	29 4 32

WEATHER CONDITIONS.

The influence of the weather has already been referred to, but it will now be as well to examine the position in a little more detail in order to ascertain the conditions under which the 1924 crops had to develop.

In discussing the benefit of fallow land, some advocates have even gone as far as to say that the wheat-crop grown on well-prepared fallow has the advantage of two years' rainfall, namely, that which falls on the fallow and that which falls on the crop. This is rather an extreme view, but at the same time fallow rains exert considerable influence on the following crop, and the appended table indicates the fallow rain affecting the 1924 crops, together with the corresponding mean for the last 40 years.

TABLE II.—*Showing Fallow Rains, August 1st of One Year to March 31st of Succeeding Year. Together with the Corresponding Mean for 40 Years, 1883-1923.*

Season.	In.	Season.	In.
1904/1905	7.18	1914/1915	3.86
1905/1906	7.96	1915/1916	9.08
1906/1907	11.29	1916/1917	14.79
1907/1908	9.13	1917/1918	10.83
1908/1909	9.51	1918/1919	5.45
1909/1910	17.56	1919/1920	7.27
1910/1911	11.41	1920/1921	13.78
1911/1912	5.88	1921/1922	7.51
1912/1913	13.00	1922/1923	9.32
1913/1914	13.07	1923/1924	15.23
Mean		1883/1923	9.66

From this table it will be noted that the 1923-4 fallow rains exceeded the mean by slightly more than 5½ in., and is one of the highest totals in our records.

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TABLE III.—*Showing Monthly Rainfall at Roseworthy College for Seasons 1917-1924 Inclusive, with the Mean Fall for each Month During the Period 1883-1923.*

	1917.	1918.	1919.	1920.	1921.	1922.	1923.	1924.	Mean, 1883- 1923.
	In.	In.	In.	In.	In.	In.	In.	In.	In.
January	0.58	0.24	0.28	0.27	1.80	1.02	0.47	0.92	0.79
February	2.12	0.26	2.50	0.00	0.52	0.08	0.00	1.82	0.59
March	0.96	0.88	0.00	0.86	1.01	0.10	0.02	1.14	0.82
April	0.68	0.83	0.24	0.69	0.20	0.90	0.10	1.02	1.48
May	3.98	2.55	1.49	1.47	2.94	3.59	6.01	2.26	1.98
June	2.17	1.22	1.07	4.44	1.95	1.73	5.03	2.72	2.62
July	1.92	1.36	0.66	1.12	1.43	3.75	4.48	0.41	1.92
August	2.60	1.83	2.00	3.01	1.21	2.19	2.42	2.08	2.07
September	3.00	0.48	1.87	1.62	2.04	1.32	4.73	2.59	1.88
October	1.72	1.88	0.83	2.53	1.56	1.40	2.17	2.45	1.66
November	1.18	0.38	0.05	1.88	1.65	0.02	0.36	2.55	1.05
December	0.95	0.10	1.39	1.41	0.85	3.90	1.67	0.47	0.90
Totals	21.86	12.01	12.38	19.30	17.16	20.00	27.46	20.43	17.76

Here is set out the monthly rainfall throughout the 12 months comparatively with similar figures for the last seven years, as well as the mean for the period 1883-1923, and it will be seen that the total amount recorded exceeds the mean by approximately 2½in.

TABLE IV.—*Showing the Distribution of "Useful Rain" in the Years 1917-1924, Inclusive, Together with the Means for the Previous 41 Years.*

	Seeding. Rains. April-May.	Winter. Rains. June-July.	Spring. Rains. Aug.-Oct.	Summer. Rains. November.	Totals.	Percentage of "Useful" to Total Rain.
	In.	In.	In.	In.	In.	
1917	4.66	4.09	7.32	1.18	17.25	78.91
1918	3.38	2.58	4.19	0.38	10.53	87.68
1919	1.73	1.73	4.70	0.05	8.22	66.40
1920	2.16	5.56	7.16	1.88	16.76	86.84
1921	3.14	3.38	4.81	1.65	12.98	75.64
1922	4.49	5.48	4.91	0.02	14.90	74.50
1923	6.11	9.51	9.32	0.36	25.30	92.13
1924	3.28	3.13	7.12	2.55	16.08	78.71
1883-1923 .	3.46	4.53	5.61	1.05	14.63	82.38

TABLE V.—*Showing Details of the Weather for the Year 1924.*

Month.	Rainfall.	No. of days on which rain fell.	Important Rains.		Minimum Temperature.	Mean minimum Temperature.	Frosts.		Maximum Temperature.	Mean maximum Temperature.
			Date.	In.			Date	Temp.		
January . . .	0.92	11	2	0.27	43.0	55.7	—	—	105.5	80.1
			10	0.22						
February . .	1.82	9	16	0.34	48.0	56.3	—	—	101.0	81.3
			17	0.30						
			18	0.44						
			19	0.33	43.0	54.3	—	—	96.2	78.8
March . . .	1.14	5	5	0.76						
			27	0.21	37.5	47.2	20	31.8	84.0	68.6
April	1.02	14	10	0.32						
							23	31.8		
							24	32.0		
							27	29.8		
May	2.26	13	17	0.25	33.5	46.2	9	31.0	81.2	66.6
			20	0.77			10	27.0		
			22	0.21			11	31.0		
			23	0.22			14	26.5		
			26	0.21			15	24.8		
							24	27.0		
							30	28.0		
June	2.72	16	4	0.42	32.5	42.87	2	25.0	64.5	57.78
			5	0.21			20	30.0		
			6	0.25			22	27.0		
			7	0.20			26	30.0		
			9	0.30			27	25.0		
			16	0.25			28	25.5		
			18	0.28			29	28.0		
July	0.41	12	23	0.07	27.5	38.01	4	31.0	70.0	61.72
							5	29.0		
							6	27.5		
							7	25.0		
							8	22.5		
							9	27.0		
							12	28.0		
							17	27.5		
							18	28.0		
							25	28.0		
							31	26.0		
August	2.08	17	12	0.86	34.0	43.46	1	27.8	54.0	62.91
			14	0.20			2	28.0		
			26	0.22			3	28.0		
							5	29.0		
							7	27.0		
							10	27.5		
							11	30.0		
							13	31.0		
							15	29.0		
							27	31.0		
September . .	2.59	22	11	0.43	35.0	45.43	3	27.0	77.0	63.86
			14	0.27			4	24.0		
			20	0.30			5	26.0		
			21	0.27			6	26.0		
			24	0.37			7	26.0		
			28	0.28			29	29.5		

TABLE V.—*Showing Details of the Weather for the Year 1924—continued.*

Month.	Rainfall.	No. of days on which rain fell.	Important Rains.		Minimum Temperature.	Mean minimum Temperature.	Frosts.		Maximum Temperature.	Mean maximum Temperature.
			Date.	In.			Date.	Temp.		
October . . .	2.45	15	4	0.24	37.0	50.09	17	28.0	91.5	72.89
			6	0.37			22	31.0		
			20	0.95						
November . .	2.55	15	1	0.20	41.5	52.86	—	—	102.0	77.04
			7	0.83						
			11	0.80						
December . .	0.47	4	27	0.16	38.5	54.03	2	29.5	109.0	83.19
							3	30.0		
Totals . . .	20.43	153					49			

Table V. shows the more important meteorological observations recorded at the College, and it is interesting to note that the number of days on which rain fell reached a total of 153, or six more than corresponding figures for the extremely wet year of 1923.

Further, 49 frosts were experienced, several being particularly severe, whilst even as late as December 2nd and 3rd the temperature dropped well below freezing point.

BERSEEM CLOVER.

For the past 13 years it has been the practice to sow a small area of Berseem clover (*Trifolium Alexandrinum*), which has proved a reliable winter-growing crop invaluable for dairy cattle. The average return of greenstuff approaches 30 tons per acre, spread over three to four cuts, although occasionally five are obtained, as in this year from Plot EF. For success it is essential that the seed should germinate whilst the ground is still warm, and therefore Berseem may be considered to be an irrigated crop, although in a normal season the sprinklers are only necessary to start the seed, the winter's rainfall being sufficient thereafter. In the appended tables are given particulars of the Berseem harvest, together with the average returns since 1912.

TABLE VI.—*Showing Yields of Berseem Clover (Trifolium Alexandrinum) at Roseworthy College, 1924.*

	Total Yield.			Acre Yield.		
	T.	C.	L.	T.	C.	L.
Plot EF (1.80 acres)—						
May 28th to June 20th	17	16	23	9	17	106
July 28th to August 19th	16	0	23	8	17	100
September 20th to October 15th . .	14	17	6	8	5	3
November 13th to 19th	4	2	66	2	5	99
December 8th to 13th	3	19	70	2	4	26
	56	15	76	31	10	108

TABLE VI.—*Showing Yields of Berseem Clover, Etc.—continued.*

	Total Yield.			Acre Yield.		
	T.	C.	L.	T.	C.	L.
Plot B (0.80 acres)—						
July 8th to 28th	6	11	62	8	4	50
September 2nd to 19th	5	18	84	7	8	49
October 16th to 26th	6	17	72	8	12	6
November 21st	21	11	88	3	4	82
	<hr/>			<hr/>		
	21	19	82	27	9	75
Plot J (1.00 acres)—						
June 21st to July 7th	6	10	35	6	10	35
August 19th to September 1st	7	14	102	7	14	102
October 27th to November 11th . . .	9	16	0	9	16	0
November 28th to December 2nd . . .	2	6	98	2	6	98
	<hr/>			<hr/>		
	26	8	11	26	8	11
	<hr/>			<hr/>		
Totals (3.60 acres)	105	3	57	29	4	32

TABLE VII.—*Summarising Returns from Irrigated Berseem at Roseworthy College, 1912-1924.*

Year.	“Useful” Rain. Inches.	Area. Acres.	Total Yield.			Acre Yield.		
			T.	C.	L.	T.	C.	L.
1912	13.05	1.190	38	12	56	32	9	18
1913	10.82	3.201	108	19	97	34	0	111
1914	6.12	2.294	46	16	94	20	8	43
1915	18.35	3.411	98	16	66	28	19	53
1916	20.25	4.642	165	1	48	35	11	6
1917	17.25	4.003	115	16	55	28	18	12
1918	10.53	3.693	107	18	93	29	4	64
1919	8.22	3.384	96	1	108	28	7	107
1920	16.76	1.368	39	7	21	28	15	48
1921	12.98	1.580	48	0	108	30	19	57
1922	14.90	3.963	120	3	103	30	6	66
1923	25.30	1.970	59	17	91	30	8	3
1924	16.08	3.60	105	3	57	29	4	32
<hr/>								
Mean for 13 years						29	16	47

Finally, we have the results of tests instituted in order to ascertain the most economic rate of seeding. It will be noted that in every instance increased yield has followed the heavier rate of seeding. However, it is difficult to fix a monetary value per ton for this greenstuff and so be in a position to state the profit or loss sustained through the use of an extra 10s. worth of seed, and, further, at this stage, no useful purpose would be served, as the tests are as yet of insufficient duration.

TABLE VIII.—*Showing Yields of Berseem Clover obtained from Light and Heavy Seedings.*

Number of Cut.	Yield per Acre.												Average Yield per Acre.							
	1921.			1922.			1923.			1924.			1921-1924.				1923-1926.			
	T.	C.	L.	T.	C.	L.	T.	C.	L.	T.	C.	L.	T.	C.	L.	T.	C.	L.		
20lbs. of seed per acre—																				
First cut.....	7	17	23	13	3	107	12	0	50	8	5	60	10	6	88	10	2	111		
Second cut.....	9	15	17	13	8	47	13	4	62	7	3	44	10	17	19	10	3	109		
Third cut.....	2	17	45	6	6	13	2	1	108	8	7	6	4	18	15	5	4	57		
Fourth cut.....	—	—	—	—	—	—	—	—	—	2	14	82	0	14	105	1	9	97		
	20	9	85	32	18	54	27	6	108	26	15	80	26	17	82	27	1	38		
25lbs. of seed per acre—																				
First cut.....	8	6	51	14	10	33	12	15	100	8	2	6	10	18	76	10	8	109		
Second cut.....	12	5	60	14	10	20	13	19	12	7	6	68	12	0	40	10	12	96		
Third cut.....	2	9	48	5	17	84	3	1	98	8	8	4	4	19	31	5	14	107		
Fourth cut.....	—	—	—	—	—	—	—	—	—	3	1	28	0	15	35	1	10	70		
	8	0	9	10	0	51	12	19	52	8	1	70	11	8	41	10	13	94		
First cut.....	8	0	9	10	0	51	12	19	52	8	1	70	11	8	41	10	13	94		
Second cut.....	12	12	25	17	11	63	14	0	100	7	14	52	12	19	88	10	17	76		
Third cut.....	2	12	89	6	7	14	3	2	36	8	10	0	5	3	2	5	16	80		
Fourth cut.....	—	—	—	—	—	—	—	—	—	3	1	28	0	15	40	1	10	80		
	23	4	104	40	5	15	30	2	76	27	13	64	30	6	65	28	18	14		
35lbs. of seed per acre—																				
First cut.....	—	—	—	—	—	—	13	2	6	8	13	104	—	—	—	10	17	111		
Second cut.....	—	—	—	—	—	—	14	2	46	8	0	80	—	—	—	11	1	63		
Third cut.....	—	—	—	—	—	—	3	0	50	8	12	6	—	—	—	16	28	—		
Fourth cut.....	—	—	—	—	—	—	—	—	—	3	4	82	—	—	—	1	12	41		
	—	—	—	—	—	—	30	4	102	28	11	48	—	—	—	29	8	19		

ENSILAGE.

When silage making was commenced, one of the two new overhead silos erected in 1923 was empty, and the other about three-quarters empty, with the result that it was found necessary to cut a total of 217 tons in order to fill them. However, they are not storing their maximum weight, as wet weather delayed operations for some time, and

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at the first spell of dry weather the barley grass, of which there was a considerable amount in the sheaves from Field No. 6C, dried off rapidly, and caused that ensilage to be bulky and lacking in succulence.

A word of explanation in connection with the summarised returns as set out in Table IX. is necessary, as the yields from No. 6C and Georges reduce the average considerably.

The prior history of the former is as follows:—1921, fallow; 1922, wheat and oats (hay); 1923, wheat. Thus the field has been heavily cropped, and this season's plots, which never recovered from the dry July, eventually returned the poor yield of 2 tons 6cwts. 15lbs. per acre. In connection with Georges, the area ensiled from this paddock consisted of headlands and divisions, and as two sides of the field are timbered, the yield suffered accordingly. Moreover, striking out and cutting back with the binder are always attended with more loss than straight-ahead work.

TABLE IX.—*Summary of 1924 Ensilage Returns*

Field.	Crop.	Area.		Total Yield.			Acre Yield.		
		Acres.		T.	C.	L.	T.	C.	L.
No. 16	Barley	1,690		13	1	58	7	14	83
No. 6B	Wheat	9,618		64	3	74	6	13	52
Georges	Oats	20,631		83	4	77	4	0	77
No. 6C	Various	24,440		56	7	51	2	6	15

In order to test which cereal or mixture of cereals is best suited for the manufacture of ensilage in this district, plots were laid out in 1922, and the annual yield, together with the mean, is shown in the appended table. The seed used in 1924 was King's Red wheat (2bush. per acre), Roseworthy Oregon barley (1½bush. per acre), Kherson oats (1½bush. per acre), Black Winter rye (1½bush. per acre), and a mixture of King's Red wheat and Kherson oats (1bush. of each).

This season's results are not high, but, being strictly comparable, do not affect the value of the mean figures. These show the wheat crop to have returned the greatest weight of ensilage, being slightly more than three-quarters of a ton ahead of the mixture of wheat and oats.

TABLE X.—*Showing Yields of Silage obtained from Plots of Cereals, 1922-1924.*

Crop.	1922			1923			1924			Means,		
	T.	C.	L.	T.	C.	L.	T.	C.	L.	T.	C.	L.
Wheat	8	4	41	10	3	15	2	12	43	6	19	108
Barley	7	0	43	—	—	—	2	17	63	4	18	109
Oats	6	17	53	9	14	45	1	5	88	5	19	25
Rye	7	8	90	8	11	29	2	6	65	6	2	27
Wheat and oats . .	8	13	82	9	2	32	2	8	74	6	14	100

TABLE XI.—*Showing Yields of Ensilage, 1905-1924.*

Year.	Rainfall.		Area. Acres.	Total Yield.			Yield per Acre.		
	“Useful.”	Total.		T.	C.	L.	T.	C.	L.
1905	14.23	16.71	—	—	—	—	8	10	0
1906	16.31	19.73	9.50	113	1	0	11	18	0
1907	13.96	15.13	17.15	92	2	75	5	7	34
1908	15.52	17.75	17.00	129	10	76	7	12	44
1909	21.15	24.05	16.962	169	18	90	10	0	3
1910	16.79	23.87	15.490	134	1	43	8	15	32
1911	9.45	13.68	30.740	152	16	28	4	19	47
1912	13.05	14.97	40.700	141	4	73	3	9	45
1913	10.82	15.66	61.511	115	14	24	1	17	70
1914	6.12	9.36	—	—	—	—	—	—	—
1915	18.33	19.76	27.384	153	14	107	5	12	33
1916	20.25	23.23	12.443	103	11	28	8	6	51
1917	17.25	21.86	9.176	77	18	84	8	9	98
1918	10.53	12.01	19.284	91	15	75	4	15	21
1919	8.22	12.38	59.436	116	12	101	1	19	28
1920	16.76	19.30	18.464	140	6	8	7	11	109
1921	12.98	17.16	19.607	141	19	47	7	4	91
1922	14.90	20.00	18.52	155	2	76	8	7	59
1923	25.30	27.46	43.559	272	1	108	6	4	105
1924	16.08	20.43	56.379	216	17	36	3	16	104
Mean for 19 years							6	11	57

HAY HARVEST.

In all, 316 tons of hay were cut and stacked. This is a lower tonnage than usual, as we had about 200 tons on hand, giving a total amply sufficient to meet our requirements, and any further area given over to hay would curtail the sale of seed wheat, which is an important function of the College.

All the crops were sown on fallow land, and the highest return was obtained from King's Red wheat, namely, 2 tons 5cwts. 82lbs. from an area of approximately 15 acres. Appended is a summary of the hay harvest.

TABLE XII.—*Summary of 1924 Hay Returns.*

Field.	Crop.	Area. Acres.	Total Yield.			Acre Yield.		
			T.	C.	L.	T.	C.	L.
No. 6B—Wheat		14.925	34	2	66	2	5	82
Grainger's A—Wheat ..		16.142	25	2	36	1	11	13
Day's C—Wheat		28.487	38	11	58	1	7	9
Total for wheat		59.554	97	16	48	1	12	95
Day's C—Oats.		51.677	85	4	77	1	12	111
No. 6A—Wheat and oats		37.506	77	19	19	2	1	64
Totals		148.737	261	0	32	1	15	11
Headlands—Various .. .		45.426	65	8	14	1	8	89
Grand total		194.163	326	8	46	1	13	70

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The average hay yield for the College Farm over the last 21 years is set out below, and it will be seen that our mean return amounts to a little more than 2 tons to the acre. It would appear, therefore, that this figure may be accepted as the normal hay return in districts similar to Roseworthy.

After taking the whole hay area into account, including headlands and divisions, we secured an average of 1 ton 13cwts. 70lbs. per acre, which is approximately 7cwts. below the mean.

TABLE XIII.—*Showing Average Hay Yields on the College Farm, 1904-1924.*

Year.	Rainfall.		Area Acres.	Total Yield.			Average Yield.		
	Useful Inches.	Total Inches.		T.	C.	L.	T.	C.	L.
1904	11.60	14.70	93.000	238	0	0	2	11	22
1905	14.23	16.71	67.000	198	8	22	3	2	71
1906	16.31	19.73	93.000	241	0	0	2	11	90
1907	13.96	15.13	51.000	91	14	20	1	15	108
1908	15.52	17.75	112.800	293	6	23	2	7	5
1909	21.15	24.05	145.397	404	4	54	2	15	68
1910	16.79	23.87	94.900	224	7	6	2	7	31
1911	9.45	13.68	200.100	290	12	94	1	8	6
1912	13.05	14.97	248.450	432	7	49	1	14	90
1913	10.82	15.66	258.200	207	7	111	0	16	7
1914	6.12	9.36	247.647	181	13	107	0	14	75
1915	18.33	19.76	341.649	806	7	36	2	7	23
1916	20.25	23.23	121.727	374	17	8	3	1	66
1917	17.25	21.86	74.580	153	2	81	2	1	6
1918	10.53	12.01	82.144	126	19	47	1	10	102
1919	8.22	12.38	298.760	280	16	48	0	18	90
1920	16.76	19.30	283.064	710	18	4	2	10	26
1921	12.98	17.16	254.835	423	7	76	1	13	25
1922	14.90	20.00	269.184	647	2	81	2	8	9
1923	25.30	27.46	196.481	471	4	3	2	7	108
1924	16.08	20.43	194.163	326	8	46	1	13	70
Mean for 21 years							2	0	95

The hay tests commenced in 1922 with wheat and oats, sown separately and as a mixture, were continued again this year. The seeding was at the rate of 2bush. for wheat, 1½bush. for oats, and 1bush. of each cereal in the mixture of wheat and oats.

Early Crossbred 53 was the wheat chosen; five acre blocks were laid out, and this variety drilled in in combination with Lachlan, Algerian, Scotch Grey, Early Burt, and Kherson oats. Respectively, the acre yields obtained were:—

	T.	C.	L.
Crossbred 53 and Algerian	2	10	13
Crossbred 53 and Lachlan	2	9	90
Crossbred 53 and Early Burt	2	4	58
Crossbred 53 and Scotch Grey	2	2	67
Crossbred 53 and Kherson	1	9	87

The mean returns from these mixtures comparatively with the yield obtained from Crossbred 53 and similar oat varieties alone are set out in Table XIV., comparatively with those obtained in previous years. The average figures over the three seasons show to the advantage of the mixture of wheat and oats, but whether this will be maintained remains to be seen after the experiment has been carried out over a longer period.

TABLE XIV.—*Showing Hay Returns from Wheat and Oats Sown Separately and as Mixed Crops, 1922-1924.*

Crop.	1922.			1923.			1924.			Means, 1922-24		
	T.	C.	L.	T.	C.	L.	T.	C.	L.	T.	C.	L.
Wheat	2	11	77	2	5	2	2	0	29	2	5	73
Oats	2	10	103	2	14	29	1	12	111	2	6	6
Wheat and oats .	2	18	86	2	18	78	2	3	41	2	13	68

Since 1920 several varieties of wheat have been subjected to hay tests, and this year we have had 15 under observation. The highest returns were obtained from two new crossbred wheats—Nizam (Emperor x Caliph) and Nawab (Anvil x Sultan). These are both promising types, claiming useful hay varieties amongst their parents, although too much reliance cannot be placed on a single year's results.

In prior reports mention has been made of the three-quarter bred King's Early crossbreds, namely, Rajah, Sultan, Maharajah, Felix, President, and Emperor, and it is interesting to note that the mean figures quoted in the following table show that the first four named have surpassed King's White.

TABLE XV.—*Showing Hay Returns from Different Varieties of Wheat, 1920-1924.*

Variety.	1920.			1921.			1922.			1923.			1924.			Means.		
	T.	C.	L.	T.	C.	L.	T.	C.	L.	T.	C.	L.	T.	C.	L.	T.	C.	L.
Rajah	—	—	—	2	0	65	3	1	80	2	2	9	1	10	2	2	3	67
Sultan	2	16	75	1	18	107	2	11	24	2	0	22	1	7	15	2	2	93
Early Crossbred 53 . .	3	4	71	2	0	57	2	4	88	1	10	83	1	9	101	2	2	17
Maharajah	—	—	—	2	4	43	2	16	13	2	2	46	1	5	31	2	2	5
Felix	2	8	33	2	2	49	2	10	13	2	1	108	1	7	16	2	1	111
King's White	2	5	23	2	4	22	2	9	2	2	5	66	1	3	101	2	1	67
President	2	3	19	1	19	89	2	16	4	1	11	96	0	18	37	1	17	94
Caliph	—	—	—	2	1	93	2	10	96	1	14	14	0	17	92	1	16	18
Gresley	—	—	—	—	—	—	—	—	—	1	17	88	1	8	89	—	—	—
Emperor	—	—	—	—	—	—	—	—	—	1	15	84	1	7	55	—	—	—
Nizam	—	—	—	—	—	—	—	—	—	—	—	—	1	16	11	—	—	—
Nawab	—	—	—	—	—	—	—	—	—	—	—	—	1	10	84	—	—	—
Ford	—	—	—	—	—	—	—	—	—	—	—	—	1	9	49	—	—	—
Fawn	—	—	—	—	—	—	—	—	—	—	—	—	1	7	5	—	—	—
Dan	—	—	—	—	—	—	—	—	—	—	—	—	1	5	2	—	—	—

With regard to hay tests with oat varieties, New Zealand Cape leads the returns for the year with a yield of 2 tons 10cwts. 79lbs., followed by Glen Innes No. 1 and Algerian.

Referring to the mean figures, Early Burt remains at the head of the list, being 5½cwts. better than Kelsalls, an early fine-strawed variety, which, as a rule, produces good-quality hay. The tall grower, Yarran, occupies third position, whilst it is interesting to record that Lachlan, our best grain yielder, has moved up from sixth position to fourth.

Further particulars can be obtained by reference to the following table:—

TABLE XVI.—*Showing Hay Returns from Different Varieties of Oats, 1921-1924.*

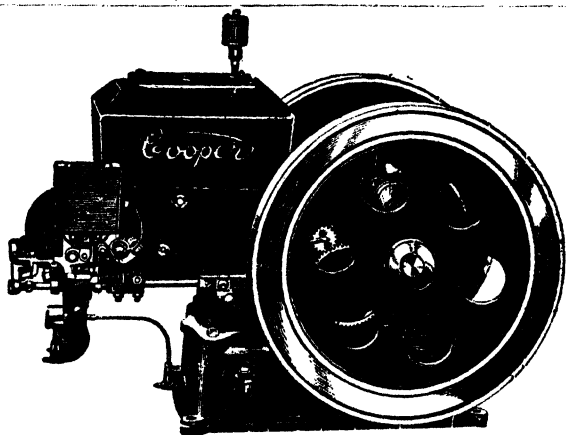
	1921.			1922.			1923.			1924.			Means.		
	T.	C.	L.	T.	C.	L.	T.	C.	L.	T.	C.	L.	T.	C.	L.
Early Burt	3	3	76	3	2	36	3	0	34	1	11	31	2	14	44
Kelsall's	2	16	84	2	11	73	—	—	—	1	18	24	2	8	98
Yarran	—	—	—	2	10	97	2	19	30	1	15	111	2	8	76
Lachlan	2	9	12	2	10	58	2	13	93	1	14	99	2	7	10
Bathurst Early	1	14	71	3	2	91	2	17	52	1	12	93	2	6	105
Scotch Grey	2	18	9	2	7	42	2	13	66	1	6	80	2	6	39
Kherson	3	0	19	2	16	44	1	17	84	1	9	19	2	5	98
Algerian	—	—	—	2	6	0	2	5	3	2	1	46	2	4	16
Mulga	—	—	—	—	—	—	3	0	2	1	7	101	—	—	—
Quandong	—	—	—	—	—	—	2	18	34	0	15	78	—	—	—
New Zealand Cape	—	—	—	—	—	—	—	—	—	2	10	79	—	—	—
Glen Innes No. 1	—	—	—	—	—	—	—	—	—	2	3	67	—	—	—

PEA HARVEST.

For the first time for some seasons an area of field pease was set aside for harvesting for grain. Thirty acres of wheat stubble in Field No. 3 were ploughed toward the end of June, and immediately sown with 2bush. of Early Dun field pease to the acre.

The machine used to harvest this crop was the pea harvester, built by Messrs. H. V. McKay Pty., Ltd. This implement moved very satisfactorily, notwithstanding the fact that the surface stones were both large and numerous. The field should have been rolled in preparation for the harvester, but even under the unfavorable conditions in this respect it did its work well. This is the first season it has been on trial at the College, but our experience has been so satisfactory that we feel impelled to draw special attention to it, as it appears to us to have solved the most difficult problem confronting pea growers, namely, the harvesting of the grain.

Ultimately we secured a return of 14bush. 17lbs. of grain to the acre, a yield which, under the circumstances, was very satisfactory.



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BARLEY HARVEST.

Below is summarised the details of the barley harvest:—

TABLE XVII.—*Summary of Barley Harvest, 1924.*

	Area. Acres.	Total Yield. Bush. lbs.	Acre Yield. Bush. lbs.
Farm crops—			
Daly's C	42.035	1,109 40	26 20
Experimental plots—			
No. 16	4.639	146 46	31 32
No. 4	3.950	99 14	25 7
Total	50.624	1,356 0	26 39

The farm barley crops were grown in Field Daly's C, which was treated as bare fallow in 1922 and under wheat in 1923, the stubble of which was ploughed up in February, and drilled in with varieties of barley early in June.

Of the malting barleys represented, Prior and Duckbill are well known and popular varieties, Stucky is a selection from Duckbill, which, in our experience, has done almost as well as Prior, and Larsen 32 is an importation from Denmark.

Roseworthy Oregon and Short Head, two College produced strains, belong to the Cape barley group, and of these the former has this year yielded approximately two bags more per acre than the latter.

Tunis No. 4, an hexagonal type, is a very early short-growing variety imported from Tunis.

TABLE XVIII.—*Showing Yields of Various Species and Varieties of Barley, 1924.*

Variety.	Area. Acres.	Total Yield. Bush. lbs.	Acre Yield. Bush. lbs.
Malting barleys—			
Prior	11.063	345 46	31 13
Stucky	4.145	99 31	24 2
Duckbill	7.796	134 34	17 14
Larsen 32	3.534	45 12	12 40
Total	26.538	625 23	23 28
Cape barleys—			
Roseworthy Oregon	7.776	260 22	33 25
Short Head	5.191	143 44	27 36
Total	12.967	404 16	31 8
Hexagonal barley—			
Tunis No. 4	2.530	80 1	31 31

TABLE XIX.—*Showing General Average Barley Yields on the College Farm, 1904-1924.*

Season.	Rainfall.		Area. Acres.	Average Yield per Acre. Bush. lbs.	
	“Useful.” Inches.	Total. Inches.			
1904	11.60	14.70	27.86	38	33
1905	14.23	16.71	65.73	25	4
1906	16.31	19.73	51.00	40	38
1907	13.96	15.13	79.30	31	21
1908	15.52	17.75	94.83	43	49
1909	21.15	24.05	75.27	35	0
1910	16.79	23.87	113.42	37	9
1911	9.45	13.68	76.09	39	31
1912	13.05	14.97	123.82	22	21
1913	10.82	15.66	91.09	12	19
1914	6.12	9.36	12.85	2	26
1915	18.33	19.76	24.44	41	40
1916	20.25	23.23	128.198	12	15
1917	17.25	21.86	126.053	40	46
1918	10.53	12.01	109.660	23	5
1919	8.22	12.38	56.385	17	15
1920	16.76	19.30	105.010	21	30
1921	12.98	17.16	66.698	26	25
1922	14.90	20.00	54.103	37	38
1923	25.30	27.46	5.351	19	37
1924	16.08	20.43	50.624	26	39
Mean for 21 years				28	17

OATEN HARVEST.

All the oat varieties were severely attacked by rust, but the quality of the grain did not suffer to the extent one would expect from the appearance of the plants. This year the yield from Early Burt far exceeded any other variety, and an average of 35bush. 11b. was gathered from an area of 21.73 acres.

Kherson and Algerian have also performed well with an average of nine bags, whilst Lachlan secured fourth position, returning 23bush. 23lbs. per acre.

Turning to the means, Lachlan remains at the head of the list with slightly more than a 13-bag average, and is 4bush. 12lbs. ahead of Scotch Grey, which is next in order of merit.

A point worthy of the attention of farmers in some districts is the fact that the three varieties having fine stiff straw and comparatively short growth, namely, Scotch Grey, Kherson, and Kelsalls, all occupy high positions in our average grain yield, and although the sample produced is not attractive, yet their ability to withstand rough weather is a strong recommendation.

TABLE XX.—*Showing Yields of Varieties of Oats, 1918-1924.*

Variety.	1918.	1919.	1920.	1921.	1922.	1923.	1924.	Mean.
	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.
Lachlan	—	42 29	57 6	41 22	39 20	31 19	23 23	39 13
Scotch Grey	49 17	31 12	55 15	30 23	22 4	35 35	20 22	35 1
Early Burt	—	48 3	36 27	26 15	31 1	28 34	35 1	34 14
Kherson	29 29	22 19	55 9	25 16	32 8	37 9	27 12	32 32
Kelsalls	17 28	33 3	49 2	39 1	27 27	20 19	17 5	29 6
Algerian	—	—	—	—	21 35	33 36	27 13	27 28
Sunrise	25 33	15 27	46 4	26 13	25 32	38 31	9 25	26 35
Guyra	—	16 1	55 29	13 37	23 20	27 20	12 26	24 36
Mulga	—	—	20 0	24 1	22 23	31 29	17 29	23 8
Bathurst Early ..	—	37 16	31 7	19 9	17 19	20 17	11 23	22 35
Quandong	—	—	36 4	12 39	20 12	23 25	18 3	22 9
New Zealand Cape	—	—	—	—	17 18	24 31	21 23	21 11
Yarran	—	21 15	34 21	14 6	29 29	20 7	9 6	19 34
Glen Innes No. 1	—	—	—	—	—	26 39	16 14	—

The farm average for oats totals 25bush, 5lbs. per acre, but low yields from the experimental area reduces this to a general average of 23bush, 30lbs. for the season 1924.

The reason for the low return from the experimental area is that because of the smallness of the blocks the use of the stripper is necessary in order to keep the seed pure. This season in several varieties a clean job was impossible, as the brittle rusty straw would not allow the passage of the false comb, and the yields suffered accordingly. The effect of the 1924 average is to reduce the mean yield by a pound.

TABLE XXI.—*Showing the Average Oat Yield for the Period 1905-1924.*

Season.	Rainfall. "Useful." Inches.	Total. Inches.	Area. Acres.	Yield. per Acre. Bush. lbs.
1905	14.23	16.71	20.00	43 10
1906	16.31	19.73	33.50	41 18
1907	13.96	15.13	20.00	—
1908	15.52	17.75	20.00	22 28
1909	21.15	24.05	23.52	43 19
1910	16.79	23.87	24.60	28 15
1911	9.45	13.68	22.82	22 8
1912	13.05	14.97	52.00	10 4
1913	10.82	15.66	3.33	11 36
1914	6.12	9.36	—	—
1915	18.33	19.76	1.10	32 32
1916	20.25	23.23	6.36	27 15
1917	17.25	21.86	20.88	14 25
1918	10.53	12.01	35.99	31 4
1919	8.22	12.38	36.51	10 17
1920	16.76	19.30	33.83	29 37
1921	17.98	17.16	55.40	25 22
1922	14.90	20.00	79.33	28 29
1923	25.80	27.41	106.70	30 22
1924	16.08	20.43	98.34	23 30

Mean for 20 years 23 36

Finally, whilst dealing with oats, the following table is submitted, enabling one to see at a glance how the varieties yield when either cut for hay or harvested as grain.

TABLE XXII.—*Showing Average Hay and Grain Yields of Oat Varieties.*

Variety.	Period.	Hay per Acre.			Period.	Grain per Acre.	
		T.	C.	L.		Bush.	lbs.
Lachlan	1921-24	2	7	10	..	1919-24	39 13
Scotch Grey	1921-24	2	6	39	..	1918-24	35 1
Early Burt	1921-24	2	14	44	..	1919-24	34 14
Kherson	1921-24	2	5	98	..	1918-24	32 32
Kelsalls	1921-24	2	8	98	..	1918-24	29 6
Algerian	1922-24	2	4	16	..	1922-24	27 28
Sunrise	1921-23	2	15	109	..	1918-24	26 35
Guyra	1922-23	2	14	103	..	1919-24	24 36
Mulga	1923-24	2	3	108	..	1920-24	23 8
Bathurst Early	1921-24	2	6	105	..	1919-24	22 35
Quandong	1923-24	1	17	0	..	1920-24	22 9
New Zealand Cape	1924	2	10	79	..	1922-24	21 11
Glen Innes No. 1	1924	2	3	67	..	1923-24	21 27
Yarran	1923-24	2	8	76	..	1919-24	19 34

WHEAT HARVEST.

As there is such a keen demand for College seed wheat, the task of drawing up the cropping programme is no light one. It is difficult to decide just how far to curtail the area devoted to varieties which we know to be on the average poorly suited to the Roseworthy district, but invaluable in others, and, therefore, much in demand. Federation is a case in point. This wheat occupies the lowest position in our averages of wheats grown as farm crops, and yet so great is the demand for seed grain that an area of over 30 acres was devoted to Federation in 1924. The season was most unfavorable to this variety, which is known to be a poor resister of disease, and, owing to the ravages of red rust and take-all, we secured the poor return of 5bush. 8lbs. per acre.

In the other wheat fields, consisting of a number of varieties, the average yields were considerably better, but in every case the plants were thinned by the dry period in July, and, finally, more or less affected by rust.

The highest averages were 19bush. 23lbs. from King's White, and 19bush. 15lbs. from a small area of Gluford, which is a new wheat claiming Ford and Gluyas as its parents.

Two tests with special seed drill attachments were conducted in Field Nottles A, and the results obtained are quoted below. However, we wish to make it quite clear that these trials are the result of but a

single year's work; in the case of the Rodda patent on extremely small areas, and confirmation on areas of an acre or more is required before they can be accepted.

The Rodda patent applies to the spacing of the grain within the rows, and the Hunt patent to the distance between the rows.

TABLE XXIII.—*Showing the Results of Seeding with Special Seed Drill Attachments, 1924.*

Crop.	Area. Acres.	Seed per Acre. Lbs.	Ordinary Seed Drill.		Rodda Patent. Bush. lbs.
			Bush.	lbs.	
Late Gluyas wheat ..	0.102	40	11	17	11 46
Late Gluyas wheat ..	0.102	60	14	52	16 1
Late Gluyas wheat ..	0.102	90	16	50	24 31
					Hunt Patent. 3 1/4 in. Rows. Bush. lbs.
Late Gluyas wheat ..	1.831	90	14	54	17 55
Prior barley.. . . .	5.689	50	30	11	32 19

TABLE XXIV.—*Showing the Average Yields of Wheat on the Colliere Farm, 1904-1924.*

Season.	Rainfall.		Area Under Wheat. Acres.	Average Yield per Acre. Bush. lbs.
	"Useful." Inches.	Total. Inches.		
1904	11.60	14.70	330.00	18 3
1905	14.23	16.71	212.00	24 11
1906	16.31	19.73	318.00	14 30
1907	13.96	15.13	178.00	13 20
1908	15.52	17.75	258.52	22 14
1909	21.15	24.05	328.47	25 5
1910	16.79	23.87	267.35	16 38
1911	9.45	13.68	234.98	14 17
1912	13.05	14.97	232.89	19 36
1913	10.82	15.66	333.07	6 32
1914	6.12	9.36	148.69	11 28
1915	18.33	19.76	367.271	21 13
1916	20.25	23.23	330.937	24 44
1917	17.25	21.86	353.473	17 32
1918	10.53	12.01	320.326	17 36
1919	8.22	12.38	329.957	9 22
1920	16.76	19.30	341.542	26 57
1921	12.98	17.16	286.393	16 56
1922	14.90	20.00	305.078	16 6
1923	25.30	27.46	184.129	15 44
1924	16.08	20.43	235.40	12 17
Mean for 21 years				17 21

YIELDS OF CHIEF VARIETIES.

On the average, early wheats do best in this district, and so it is not surprising to find all the high positions held by early varieties. with the mid-season types, such as Queen Fan, Yandilla King, Marshall's No. 3, and Federation well down the list.

Sultan is not very rust-resistant, although in some seasons it may escape the disease, and, in consequence, Gluyas gained sufficient advantage in 1924 to displace it from the leading position in the averages. When both grain and hay are taken into consideration, Sultan may be regarded as being the best dual purpose variety, followed by King's White and Early Crossbred 53 in that order. Gluyas, although producing weighty hay, is, on account of its color, not regarded as a hay variety, and therefore has not been considered in this connection. Faun, an early wheat, has been doing well, and is deservedly popular in some of the mallee districts. With us it has improved its place in the averages, and has moved from eleventh to eighth position.

TABLE XXV.—*Showing Yields of Chief Varieties of Wheat Grown as Farm Crops, 1915-1924.*

Variety.	1918.		1919.		1920.		1921.		1922.		1923.		1924.		Means.		Period.
	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.	
Early Gluyas	14	53	9	56	34	25	30	57	20	49	9	50	14	19	21	32	1915-24
Sultan	35	15	19	51	28	11	17	6	24	12	12	0	11	13	21	5	1917-24
Caliph	27	29	15	54	27	46	21	20	27	28	13	48	12	15	20	29	1915-24
President	30	4	18	41	25	22	11	47	28	27	18	16	14	19	20	16	1917-24
King's White	15	30	13	54	22	20	13	16	22	55	22	35	19	23	20	15	1915-24
Ford	14	32	19	12	25	23	15	18	20	46	19	30	15	59	20	14	1916-24
Early Crossbred 53 ..	15	41	9	21	38	5	15	5	21	46	16	51	9	29	19	19	1917-24
Faun	18	8	26	7	23	53	20	55	17	53	16	33	14	33	18	45	1917-24
Rajah	19	27	19	7	25	46	9	27	22	48	23	51	8	17	18	21	1917-24
Felix	22	20	20	41	28	8	9	38	28	21	8	14	10	18	18	16	1917-24
Maharajah	15	22	16	25	27	45	11	20	20	52	25	30	8	7	18	4	1917-24
Queen Fan	17	3	5	19	22	47	21	15	23	37	13	39	12	54	17	55	1915-24
Late Gluyas	18	12	5	11	26	29	23	25	17	18	6	6	14	54	17	42	1915-24
Yandilla King	19	10	9	47	27	36	9	47	24	12	23	15	9	55	17	40	1915-24
Marshall's No. 3	16	43	8	35	28	17	11	14	27	32	20	31	11	33	15	36	1915-24
Federation	14	8	6	58	25	18	16	44	20	0	21	30	5	8	15	16	1917-24

TABLE XXVI.—*Giving Average Hay and Grain Yields of Wheat Varieties.*

Variety.	Period.	Hay per Acre.			Period.	Grain per Acre.
		T.	C.	L.		Bush. lbs.
Sultan	1920-24	2	2	93	..	1917-24 21 5
Caliph	1921-24	1	16	18	..	1915-24 20 29
President	1920-24	1	17	94	..	1917-24 20 16
King's White . . .	1920-24	2	1	67	..	1915-24 20 15
Early Crossbred 53 .	1920-24	2	2	17	..	1917-24 19 19
Rajah	1921-24	2	3	67	..	1917-24 18 21
Felix	1920-24	2	1	111	..	1917-24 18 16
Maharajah	1921-24	2	2	5	..	1917-24 18 4

TABLE XXVII.—*Showing Yields of Latest Strains of College Selected Wheats.*

Variety.	Sele- tion.	1919.	1920.	1921.	1922.	1923.	1924.	Means.	Period.
		B. L.	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.	
Tan.....	6	39 34	22 6	24 39	20 16	15 28	8 33	21 46	1919-24
Caliph.....	9	19 56	29 11	16 10	27 28	13 48	12 15	21 15	1916-24
Sultan.....	8	22 47	26 46	22 6	24 12	5 8	12 29	21 12	1917-24
Ford.....	10	19 12	25 23	22 58	25 33	7 30	11 20	20 54	1916-24
King's White.....	19	21 40	32 39	15 49	22 55	15 2	18 21	20 14	1909-24
President.....	8	20 23	28 4	21 3	28 27	6 26	11 29	20 8	1917-24
Felix.....	8	20 41	27 10	22 59	28 21	5 20	10 30	19 36	1917-24
Gluyas.....	19	20 42	22 4	17 0	20 49	9 50	27 1	19 3	1909-24
Faun.....	9	20 41	27 20	21 21	17 53	8 31	21 7	19 3	1917-24
Emperor.....	8	16 40	14 41	15 30	26 12	12 16	11 36	18 37	1917-24
Queen Fan.....	15	17 36	20 41	17 11	23 37	8 45	5 47	18 19	1910-24
Late Gluyas.....	19	20 35	26 33	14 58	17 18	6 6	29 16	18 9	1909-24
Federation.....	16	12 37	17 59	16 33	20 0	11 12	3 28	17 49	1909-24
Marshall's No. 3.....	18	18 11	19 43	18 23	27 32	6 45	6 28	17 25	1909-24
Rajah.....	8	17 35	19 53	14 32	22 48	17 37	8 49	17 21	1917-24
Maharajah.....	8	23 23	15 31	19 6	20 52	10 56	12 26	17 3	1917-24
Gypsy.....	6	22 10	23 50	14 49	21 21	6 14	12 30	16 49	1919-24
Yandilla King.....	13	11 58	25 12	16 0	24 12	15 46	9 55	16 47	1912-24
Crossbred 53.....	9	19 10	24 14	14 5	16 56	3 40	8 2	15 45	1917-24

The new crossbred wheats at present under test are very attractive, and some may prove to be useful varieties. Nizam and Nawab have also been referred to in connection with the hay tests, whilst Gluford appears likely to prove an acquisition to our grain wheats.

The Crossbred 53 crosses also promise well, especially when Sultan is the other parent. Sirdar is a particularly solid strawed variety, and we anticipate heavy hay returns from this crossbred. As yet the quantity of grain secured has been too small to allow for a hay test, but in the coming season provision has been made for a trial in the hay experiments.

TABLE XXVIII.—*Showing Yields of Some New College Crossbred Wheats (1916-1920 Crosses).*

Variety.	Pedigree.	Yield per Acre.						Means.
		1920.	1921.	1922.	1923.	1924.	B. L.	
		B. L.	B. L.	B. L.	B. L.	B. L.	B. L.	
Captain.....	Fan x Caliph (1916).....	27 3	18 26	18 3	—	20 56	21 7	
Nizam.....	Emperor x Caliph (1916).....	28 30	22 39	24 22	13 20	14 2	20 35	
Nawab.....	Anvil x Sultan (1916).....	26 20	23 50	25 10	5 14	9 39	18 3	
Gluford.....	Ford x Gluyas (1918).....	—	—	20 25	24 27	24 21	23 4	
Forel.....	Ford x Florence (1918).....	—	—	21 53	16 59	24 3	20 58	
Sirdar.....	Felix x Tunis (1918).....	—	—	—	13 20	18 15	15 48	
Crostan.....	Crossbred 53 x Sultan (1919).....	—	—	—	30 0	24 12	27 6	
Glede.....	Federation x Gluyas (1919).....	—	—	—	31 49	19 54	25 52	
Calibre.....	Crossbred 53 x Caliph (1919).....	—	—	—	27 47	22 11	24 59	
Crescent.....	Crossbred 53 x President (1919).....	—	—	—	25 0	24 34	24 47	
Feud.....	Federation x Late Gluyas (1919).....	—	—	—	30 13	18 15	24 14	
LL.....	Crossbred 53 x Gluyas (1920).....	—	—	—	—	16 40	—	
LN.....	Caliph x Ford (1920).....	—	—	—	—	13 0	—	
LO.....	Sultan x Ford (1920).....	—	—	—	—	12 16	—	
LG.....	Daphne x Faun (1920).....	—	—	—	—	12 2	—	
LJ.....	Marshall's No. 3 x Faun (1920).....	—	—	—	—	11 20	—	

FACTORS INFLUENCING THE ABSCISSION OF FLOWERS AND PARTIALLY DEVELOPED FRUITS OF THE APPLE.

[A Resume of some American Experiments, by RODNEY FOWLER, Manager of the State Orchard, Blackwood, read before a meeting of the local Branch of the Agricultural Bureau.]

I have chosen this subject for our meeting to-night as one which particularly interests us all and one about which every member present must desire to know something. We are very much in the dark as to why so many blossoms do not set fruit, why some trees bloom heavily and yet do not set fruit, and why, after the fruit has apparently set, so many fall off just when they appear to have set nicely. How often during the blossoming time, when perhaps the trees are white with bloom, one hears the remark that there is going to be a "bumper" crop. "Look at the blossom," and though it is quite true that one cannot have fruit without first having the bloom, it certainly does not always follow that a heavy bloom means a heavy crop. Sometimes quite the reverse happens, a heavy bloom resulting in a light crop, while a moderate bloom will sometimes produce a heavy crop. In the following paper I have tried to condense the work carried out by Arthur J. Heinicke, of the Cornell University Agricultural Experiment Station, as recorded in Bulletin 393, and claim no originality for the subject matter.

Observations have shown that normally less than 10 per cent. of apple blossoms which open in spring produce fruit. Many of the flowers are lost a few days after the petals fall, and a large number of the partially developed fruits are thrown off during the next few weeks, and a large drop usually takes place when the fruits are from one to three centimetres in diameter—spoken of in America as the June drop. This latter drop may or may not be beneficial to the fruitgrower. If more than 5 per cent. to 10 per cent. of the flowers on a tree producing a heavy crop set fruit, a large quantity of fruits must be removed by hand to enable the remainder to attain a commercial size and color; but, on the other hand, as before stated, apple trees frequently produce an abundance of flowers, but little or no fruit is harvested from them, as if any sets it falls off later on. When this happens we generally blame the climatic conditions, and though in some instances heavy loss is due to frost, wind, rain, and hail, or to disease and insect pests, these factors do not always account for the heavy drop or non-setting of fruits, as this often occurs even in the absence of such destructive agents. This is particularly noticeable in a collection such as we have in this Experimental Orchard, where sometimes it is found that trees of different varieties, all carrying heavy bloom and all subject to the same climatic conditions, set with very varied results. All do not set heavy crops, though all may bloom heavily.

The failure of a large proportion of apple blossoms to set and the heavy loss of partially developed fruits are frequently associated with poor pollination and lack of fertilization, and the fact that a large number of the fruits that fall have fewer seeds to the fruit than those which remain on the trees indicates that the development of seeds is an important factor in fruit setting; still many flowers set fruit even though poorly pollinated, and many fruits remain on the trees and develop normally even though they have relatively few seeds. We have a pear in this Orchard that is apparently seedless, and, though I have cut numbers of fruits from this tree, every year it shows the same characteristics and I have not yet discovered a fruit carrying any seeds at all.

Obviously, then, there are other factors, apart altogether from the destructive agents previously mentioned and in addition to poor pollination and lack of fertilization, which influence the abscission of flowers and partially developed fruits of the apple, and it was with the object of studying such factors that a most elaborate series of observations and experiments have been carried out during the past three seasons by Professor Heinicke and his staff.

That the matters under discussion have exercised the minds of fruitgrowers and investigators for many years is proved by the writings of Professor Langley in 1729, and he then attributed the drop to lack of nourishment, the trees having "too great abundance of wood covered with beautiful blossoms." Professor Hendrick in 1908 expressed the opinion that unfavorable weather during blossoming time is the predominating factor in the loss of fruit crops, as besides the obvious damage done by wind, hail, and frost, cloudiness, wind, and low temperatures during blossoming time offer unfavorable conditions for pollination and subsequent fertilization.

Professor Waite (1894) observed that many varieties of apples and pears are self-fertile. Fruits resulting from cross-pollination were found to be larger and finer specimens than those resulting from self-pollination. The former contained large, plump seeds, and the latter small, flattened. It was also noted that the ability of a tree to set fruit either with its own pollen or with that from another tree was affected by its state of nutrition and its general environment.

Since Waite's work the need of cross-pollination to insure a set of fruit has received considerable attention. While most critics or workers on this question recognise, as does Waite, that there are other factors aside from self-sterility which cause the falling of blossoms and immature fruits, all of them seem inclined to attach special importance to the necessity of cross-pollination for many varieties of fruits. It is pointed out that the structure of the flowers in many cases is such as to prohibit self-pollination, whereas many flowers have special modifications that seem to favor cross-pollination.

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Other workers, as, for instance, Professor Ewert, while not ignoring the question of pollination, have directed special attention to the importance of nutrition as a factor in fruit setting.

Ewert assumes that fruit formation on a tree occurs under competition for organic food. Such food, he thinks, has a greater tendency to flow to those fruits that contain seeds which in turn are the result of cross-pollination. Consequently, seedless fruits developing on the same tree with fruits containing seeds are handicapped, and if the food supply proves to be inadequate, such fruits will eventually fall off.

Ewert believes that the question of the need for cross-pollination in fruit setting has been over-emphasized, and he is of the opinion that cold, rainy weather at blooming time is unfavorable to the setting of fruit, not so much because it hinders fertilization as because such conditions are generally harmful to the development of the young fruit.

A number of other general causes, such as poor soil, ploughing during blooming time, drought, and the like, are occasionally held accountable for crop failure after blossoms have been produced.

The observations and experiments recorded in the bulletin under notice were made during the course of three seasons, 1914 to 1916 inclusive; for the most part the work was done at the Experiment Station Orchard at Ithaca, and the trees under observation were between 40 and 50 years old. The trees had been pruned heavily some years before, and since then they have received ordinary care in the matter of cultivation, pruning, and spraying.

It should also be mentioned that the natural drop only is considered, not the drop caused by insects or disease. It was found that in a well-sprayed orchard the drop resulting from scab and codlin is practically negligible. Examination of hundreds of flowers and small fruits showed that only about 1 per cent. were affected by scab, but where unfavorable weather prevented effective spraying, scab infection on the stems of flowers and young fruits caused a heavy drop.

I cannot attempt to go into details concerning all the experiments tried, but will touch on just a few of the most interesting, such as, for instance:—

1.—Relation Between Amount of Bloom and Set of Fruit.

In the spring of 1916 most of the mature trees produced heavy bloom, though individual limbs on many trees bore relatively few flowers. A number of such limbs were labelled and corresponding limbs with a heavy bloom, but otherwise like the former, that is, having a similar exposure and arising from the same parent limb, were also labelled.

After the main drop the total number of flower bearing spurs on each limb was obtained, together with the number of spurs that had set fruit, and it was found from the data recorded that limbs with light bloom taken from four different trees set an average of 73 per cent. of fruit, while limbs with heavy bloom from the same trees set only an average of 14 per cent.

2.—*Set of Fruits on Limbs with Large Leaves and on Limbs with Small Leaves.*

It is not uncommon to find individual limbs with leaves noticeably smaller than those on the remaining limbs of the same tree, and in 1916 such small-leaved limbs which had produced a heavy bloom were labelled, and limbs with normal leaves, but otherwise similar, were likewise labelled, and from the recorded data it was found that vigorous limbs with large leaves set an average of 41 per cent., while weak limbs with small leaves set an average of only 15 per cent., in other words the percentage of flower-bearing spurs that set fruit was greater on the branches with large leaves than on the branches with small leaves.

3.—*Set of Fruit as Influenced by the Location of the Spur on the Twig Growth of Different Years.*

Observations were made to determine whether flower-bearing spurs arising from wood of different ages would be more likely to set fruit in some cases than others, and it was found that there were a great many factors governing this aspect of the matter, but it was also found that apparently the age of the spur alone, at least from the second to the fifth year, has little influence on its fruitfulness.

4.—*Relation Between Number of Flowers to the Spur and the Ability of the Spur to Set Fruit.*

The number of flowers on an apple spur varies from two to seven, and casual observations seemed to indicate that there is a relation between the number of flowers produced by the spur and its ability to bear fruit. Records were made of the number of flowers borne in spurs that lost all fruit at the first drop, on those that held fruit until the next drop, and on those that finally set fruit, and it was found that spurs losing all fruits at the first drop have an average number of flowers to the spur of 4.45, spurs holding fruit till the next drop have an average of 5.02, and spurs that finally set fruit have an average of 5.74, so that spurs that lose all flowers and fruits during the first drop have the smallest average number of flowers, and those that finally set have the largest number of flowers.

5.—*Relation Between Water Supply, Leaf Area, and Pushing of Buds.*

It is generally understood that an abundant supply of water is a factor in producing large leaves, and this was demonstrated by a simple experiment, and it was also shown that the large, plump buds, which produce the heavy spurs, are more abundantly supplied with water than the smaller buds, and in this connection it seems reasonable to assume that limbs producing a heavy bloom will supply less sap to the individual spur than similar limbs which produce a light bloom. The spurs from the former limbs are not so likely to set fruit as those from the latter limbs.

From the various experiments and records taken 42 facts and observations are contained in the summary, but I will only draw attention to a few of them, as otherwise this paper will become wearisome.

1. From two-fifths to four-fifths of the total number of flowers are lost during the early drop.

2. The proportion of spurs that set fruit after the first drop varies considerably on different trees of the same variety, and on different limbs of the same tree.

3. Only 3 per cent. to 7 per cent. of the total number of flowers finally develop into fruit.

4. From one-sixth to one-third of the flower-bearing spurs finally set fruit.

5. A larger proportion of spurs set fruit on limbs that have produced a relatively light bloom than on limbs that have produced a full bloom.

6. Spurs of limbs with large leaves are more likely to set fruit than spurs on limbs with small leaves.

7. The spurs near the end of a season's growth, or just before a zone of weak buds, are the most likely to set fruit. As a rule the spurs in the terminal half of a given season's growth set more abundantly than spurs in the basal part.

8. Spurs that produce many flowers are more likely to set fruit than those producing a few flowers.

9. The water supply is a factor in increasing the size of leaves. More water passes to vigorous than to weak buds.

10. The apples that fall in the early stages of their development have fewer seeds on the average than the apples that remain on the trees, though the reverse is sometimes the case.

11. Unsymmetrical fruits resulting from imperfect fertilization are more frequent in fruit that has dropped than in fruit that remains on the tree.

The results presented emphasize the importance of vigor, more especially the vigor of the individual spur, as a factor in fruit setting. Seeds appear to be valuable because they supplement the forces that bring sap to the fruit.

The observations and experiments so far recorded justify the tentative conclusion that unfavorable conditions of nutrition and water supply are among the basic factors which cause the normal drop of flowers and partially developed fruits of the apple. All factors that have a direct or an indirect influence on nutrition and water supply of the flower and fruit, such as pollination, weather, cultivation, and the like, are of importance. Fruit development, however, is possible without cross-pollination, and even under relatively unfavorable climatic conditions, so long as the young fruit has an abundant supply of water and of readily available plant food.

LUCERNE AND COUCH GRASS.

"You are faced with a rather serious problem in attempting to establish lucerne on land which is now growing couch grass (*Cynodon dactylon*), because this grass is extremely difficult to kill, and as it is one of the few weeds which will successfully compete with the lucerne crop, it must be eradicated before you can hope to grow good lucerne," said the Chief Agricultural Instructor (Mr. W. J. Spafford), in reply to an inquiry.

"The most economical way for you to act will be to plough up the land as early in the season as you can; keep it as bare-fallow until next autumn (April, 1926); cultivate the land at least once a month; keep a few sheep on the land throughout the twelve months that it is fallowed, only supplying them with 'dry' feed, such as cereal hay. Because you will have to cultivate the land fairly deeply each time, so that the roots and underground stems of the grass are brought to the surface to be accessible to the sheep, the land should be heavily rolled to pack it together before seeding.

"This twelve-months' bare fallow, with plenty of cultivation, and sheep on it the whole time, will lead to the eradication of the couch grass, and should have the land in good condition and good heart to start the lucerne crop very well on the first seeding rain in the autumn."

SPRING AND AUTUMN CULTIVATION OF FALLOW.

"Does the use of a disc implement instead of the tynes cultivator in the spring have any injurious effect on the succeeding wheat crop?" recently asked a wheatgrower in the Spalding district. To this query the Chief Agricultural Instructor (Mr. W. J. Spafford) replied that any damage done to the fallowed land by the spring cultivation was usually caused by one of two happenings, viz., (a) ripping up the land to too great a depth, or (b) breaking it up to such a fine state of subdivision that it ran together when a heavy late spring rain fell. In conditions such as existed in the district under notice, the latter might result from the use of a disc cultivator for the spring cultivation, but it could be corrected by again stirring the soil before the surface had dried and set hard.

As to whether discing fallow in March (when not too dry) for the purpose of killing melons, would injure the coming crop, Mr. Spafford said the operation would not prove injurious providing the work was done very shallow. If the melons were very bad it would sometimes mean that two trips (at right angles to one another) must be done with this shallow disc-cultivation to make a good job. Shallow work in late summer or early autumn did not injure the fallow, but deep work with a disc, or any other implement, might affect the crop, and often lead to the appearance of "take-all."

AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

MID-NORTHERN CONFERENCE.

Representatives of Mid-Northern Branches of the Agricultural Bureau met in conference at Georgetown on Wednesday, March 25th. The Department of Agriculture was represented by the following:—Mr. A. M. Dawkins (member of the Advisory Board of Agriculture), Professor Arthur J. Perkins (Director of Agriculture), Mr. P. H. Suter (Dairy Expert), and Mr. H. J. Finnis (Secretary of the Advisory Board of Agriculture). Mr. M. McAuley (President of the Georgetown Branch of the Agricultural Bureau) occupied the chair. Delegates to the number of over 250 attended from the following Branches:—Gladstone, Mannanarie, Laura, Nelshaby, Blyth, North Bundaleer, Georgetown, Redhill, Bundaleer Springs, Whyte-Yarcowie, Booleroo Centre, Gulnare, Wirrabara, Murraytown, Brinkworth, and Yacka.

Considerable interest was displayed in the exhibits staged by members of the various Branches, particularly that of Messrs. Hill Bros., of Georgetown, who had on view trophies that had been won by their Clydesdale horses.

Mr. A. M. Dawkins (Member of the Advisory Board of Agriculture) opened the Conference. Conferences of Branches of the Agricultural Bureau, he said, brought together those who were anxious to learn and the Departmental officers who were willing to teach. The problems and difficulties of the producers could be placed before the officers of the Department, who were able to assist farmers to solve those difficulties. On journeying from Gawler to Georgetown he had been struck with the absence of sheep in many of the districts through which he had travelled. Some farmers did not realise the value of sheep on their property. Sheep assisted very materially in the cultivation of the ground, they compacted the soil, they helped to keep the fallows clean, and utilised what would otherwise be waste. He was not a "sheep" man, but he had a small flock of 200 ewes, from which he obtained 180 lambs, for which he received £1 16s. per head, and an average of 12lbs. of wool, which realised 2s. per lb. Better results even than that, he thought, could be secured at Georgetown. He hoped that the Conference would be a success, and that it would be of benefit of all.

BUSH FIRE CONTROL.

Mr. P. J. Curnow (Wirrabara), in the course of a paper dealing with this subject, said in country districts during hot and dry summers, and especially after a wet winter, when natural grass was abundant, the danger from bush fires was ever present. That danger was most serious when crops were ready to harvest. During such periods it was incumbent upon every citizen, and particularly landholders, to keep a sharp look out for outbreaks, and also to hurry to fire-stricken areas the moment the alarm was given. Prompt action by many men would often avert serious losses. The installation of the telephone in country districts and the introduction of the motor car had been

of great assistance in bringing men together to fight fires. To obviate wasted effort, which was inevitable when there was an absence of a leader to take charge of fighting the fire, he suggested the appointment of fire controllers under the Bush Fires Act of 1913. The district council of Port Germein, in which the town of Wirrabara was situated, had some years ago appointed a Bush Fires Committee and fire controllers, and they had been responsible for suppressing serious outbreaks of fire. Mr. J. Buchan (Georgetown) said that next to a drought, fire was the farmer's worst enemy. He was a smoker, yet he protested against the practice of farmers who smoked during harvest operations—a breach of the Bush Fires Act.

On the motion of Mr. R. J. Rose (Laura), seconded by Mr. P. J. Curnow (Wirrabara), it was decided to commend to district councils the wisdom of appointing fire controllers and fire fighting committees, and urge the Advisory Board of Agriculture to request Branches of the Agricultural Bureau to impress upon their district councils the wisdom of taking steps to appoint fire controllers.

Mr. P. H. Suter (Dairy Expert) then delivered an address, "Present Phases of the Dairying Industry."

REFRIGERATION.

Mr. J. Bowker, a member of the Laura Branch, who read a paper, "The Advantages of Refrigeration," said it was doubtful whether any scientific or commercial enterprise of recent years had been of greater

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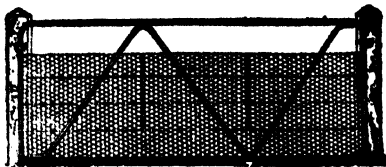


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moment to the human race than the science of refrigeration and its practical application in the modern cold storage industry. Mechanical refrigeration and cold storage had four chief uses in commerce: To prevent premature decay of perishable products, to lengthen the period of consumption and thereby increase production, to enable the producer to market produce as it was required by the consumer, and to make possible the transportation of produce in good condition from producer to consumer irrespective of distance. Before the introduction of refrigeration, the consumption of many forms of produce was limited to certain seasons, but now many varieties of fruit could be purchased right throughout the year, and dairy produce was available at reasonable prices. The refrigerating equipment on ocean-going steamers enabled people in the thickly populated areas of the world to partake of many of the perishable goods raised in Australia, at a price that was reasonable to the consumer and an advantage to the producer. The paper concluded with a reference to the huge proportions to which the refrigerating industry had grown in America. Congratulatory remarks on the paper that had been presented to the Conference by Mr. Bowker were made by Messrs. P. Curnow (Wirrara), J. Gerke (North Bundaleer), J. Angley (Georgetown), and R. J. Rose (Laura).

CO-OPERATION.

Mr. M. McCauley (Georgetown) contributed a paper dealing with this subject. He outlined various disadvantages under which farmers were laboring, and suggested a closer co-operation as a means of doing away with these. In the discussion that followed, Mr. J. Gerke (North Bundaleer) said no co-operative movement that had been instituted among the farming community had been a success. He referred to the huge sum of money that was circulated amongst agents who handled superphosphate, and he believed that by organizing a real system of co-operation, the payment of agents' fees could be obviated. Mr. J. Watt (Laura) said the success of co-operation was spoilt by the good seasons that South Australian producers were experiencing. Mr. F. H. Lock (Whyte-Yarcowie) said the keynote of the trouble was that farmers were not prepared to sacrifice something for the other man. Mr. M. Coffey (Redhill) referred to the benefit that small sheep owners would obtain from the introduction of co-operative shearing sheds. Mr. J. Atkinson (Yacka) said farmers were too independent to make a success of co-operation. How could they expect co-operative organisation to succeed if they did not support it, and that was at the bottom of the failure of the co-operative movement in South Australia.

RESOLUTIONS.

During the "Free Parliament" session it was decided on the motion of Mr. M. Coffey (Redhill), seconded by Mr. G. Hill (Georgetown), that steps should be taken to ensure that cornsacks were of uniform size and quality; also, at the instance of Mr. P. J. Curnow (Wirrara), that in the event of a Bill not being brought before Parliament by September on the roads question, the opinion of the Annual

Congress of the Agricultural Bureau be obtained on the advisability or otherwise of a wheel tax. Mr. R. J. Rose (Laura) seconded the motion, which was carried.

CROP COMPETITIONS.

The Director of Agriculture (Professor Arthur J. Perkins) presented a silver cup to Mr. J. A. Lyons (Georgetown), who had secured first position in the Mid-North wheat competitions, 1924-25. Mr. A. S. Kirk (Redhill), who won second prize, was presented with a gold medal. The third prize was won by Mr. F. W. Heinrich (Brinkworth), who received a silver cake dish. Mr. J. A. Lyons (Georgetown), paid a tribute to the untiring efforts that Mr. A. O. Badman (secretary of the Mid-North crop competitions) had displayed in canvassing the district and making the competitions so successful. Mr. A. Button (Redhill) and the Secretary of the Advisory Board of Agriculture (Mr. H. J. Finnis) also spoke of the good work performed by Mr. Badman. It was announced that Mr. Badman would give a gold medal for the best series of wheat experimental plots conducted by any farmer in the Mid-North areas.

TOP DRESSING.

The Gladstone Branch asked whether top dressing of pastures with artificial manures had been attended by beneficial results. The Director of Agriculture said results had been more striking in the

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South-East than in the Northern areas of the State. In so far as the Middle North was concerned, farmers were aware of the fact that land that had been treated with super for wheat growing carried very much better herbage when left out of cultivation than land that had not been so treated. To-day sufficient results were available to justify the application of manures to secure improved vegetation. The application of phosphatic manures would change the nature of the vegetation, leguminous plants would develop, and pastures would be improved. At Kybyholite, very careful experiments had been carried out. Land that had not been treated with super had carried nine-tenths of a sheep to the acre, whilst land after being top dressed for five years carried three sheep to the acre, and the carrying capacity of the land was improving every year. However, he did not think they could expect such striking results in the North; but if they were prepared to apply 1cwt. of super every other year, very satisfactory results should be secured. Referring to the growing of subterranean clover, the Director stated the seed should be sown in April, so that it would receive the benefit of the first rains. That clover required nothing less than a 20in. rainfall. The plants did not make much growth during the winter months, but with the coming of spring they would make headway. The general experience was that when once strongly established, it was difficult to eradicate. It was an annual and seeded itself very abundantly. In the South-East, one well-known South-Eastern farmer applied no more than 1lb. of seed to the acre. Rather than pay high prices for the seed he preferred to put the money into super. If only 1lb. of seed to the acre was sown, the germination the first year would not be very thick, but after a few years, when the plants had been properly dressed with super, it was not uncommon to see plants 5ft. and 6ft. across. In two years the ground would be covered with clover. A normal rate of seeding was 3lbs. to 4lbs. to the acre.

SOWING SUPER IN MARCH.

Mr. L. J. Sargent, on behalf of the Gladstone Branch, asked whether it would be beneficial to drill in super, say, in March, before sowing seed at the usual season. The Director of Agriculture said that for a number of years one of the best hay farmers in the Roseworthy district had made a practice of drilling in super during February, the wheat being sown at the usual time of the year, and frequently crops yielding 4 tons to the acre were cut. The farmer's opinion was that the seeding period over which wheat could be sown in ordinary years to the best advantage in the Lower North areas was a very short one, and the fullest advantage had to be taken of the best possible conditions. By having the manure drilled in early in the season, the farmer was able to broadcast the seed and cover from 60 acres to 70 acres in one day, where, under ordinary seeding practice, he would take more than twice the time to cover that area of land. The early growth of the crops was possibly not quite so good as when the seed was sown with the super at the usual seeding time, but the final results were equally good. Where large areas had to be put under crop, it was a rational practice; but when they had relatively

small areas, conditions did not warrant the adoption of the proposal. There was nothing to be gained by going over the land twice when one operation would do the job.

BLUESTONE AND PICKLING.

The Gladstone Branch also asked whether bluestone had deteriorated in quality during recent years. Professor Perkins said there was no reason for supposing that the bluestone of to-day was inferior to that purchased 20 years ago. The various machines and methods of pickling in vogue at the present time were not in use many years ago. If, however, they had any doubts as to the efficiency of the bluestone, he would be pleased to have samples analysed if they would send them to the office of the Department in Adelaide.

In dealing with the question, "Is it necessary to pickle seed wheat which is 18 months old to prevent smut?" the Director said that as a matter of precaution he would advise pickling in every case. If the spores were on the grain 18 months ago, they would be there to-day, providing the wheat had been stored under dry conditions.

MAINTAINING SOIL FERTILITY.

The evening session was opened by a paper from Mr. H. Pech, of the Laura Branch, in the course of which he dealt with those types of land which were of a red, sandy character, and on which crops were inclined to turn a yellow color when the weather was wet and cold. Those soils should not be cropped to the same extent as the heavy soils. If a paddock was left out for grazing, it was usually one which consisted of heavy land, because it carried better feed than the lighter soils. The light soils should be made to produce a fodder crop on which the stock could be grazed. Sheep should be used for the grazing of the crop, because they could be handled and fed more economically than any other form of livestock. In order to illustrate his remarks, he cited as an example a farm consisting of five paddocks, three of which were light land. If those paddocks were worked on a three-course rotation, the soil fertility should be improved and maintained. No. 1 paddock would be under fallow, No. 2 under wheat, and No. 3 would be left out for grazing. It did not pay to leave any of the land idle. As a rule, there was little or no feed that would grow on the stubble, so that it was necessary to grow forage crops and apply heavy dressings of super. He believed that it would be possible to grow legumes successfully on the lighter soils. Instead of sowing barley and oats on the stubbles, he suggested that farmers should try subterranean clover mixed with oats or barley. Should a good stand of clover be secured, it would possibly pay to leave out the land for a period and top dress annually.

The Director of Agriculture congratulated the writer on the interesting paper he had read. Farmers were coming to the view that farming, instead of impoverishing the land, improved it. There was no doubt that the light land worked out more rapidly than the heavier

soils, and the former were also less fertile than the latter. On light land the organic matter was destroyed by farming operations, chiefly by the practice of fallowing. Continuous bare fallow tended to impoverish the soil; that was a point usually recognised in districts which consisted of light lands. Sometimes farmers made the mistake of cropping that type of land as often as the heavier soils. The writer had suggested spelling the land for one season. There were many areas which should not be cropped more than once in four or five years. Such lands could be put to no better use than carrying sheep. Mr. Pech mentioned the fact that only a small quantity of feed could be found in the stubbles. That was bound to be the case if the land had been well fallowed. In any case, it was not a good policy to trust to luck so far as the seeding of the grazing paddocks was concerned. Adequate provision should be made for the sheep. Mr. Pech had suggested subterranean clover. There was no reason why small experiments should not be conducted to test that plant. However, he thought it would be a doubtful proposition in districts where the rainfall was below 20in. He questioned whether subterranean clover would be a good crop where the rainfall was light. Under their conditions, he did not think they would find a better crop than oats, and where oats were grazed, the sheep returned organic matter to the soil in the form of droppings. The oats should be sown early, with a light tillage, and the crop could be used for grazing purposes. Lucerne was rather a hardy crop that could be grown in the North. The seed could be sown with a hay crop and would provide useful grazing. If, however, they went in for such a crop, it would be necessary to divide an average-sized farm into more than five paddocks, especially if sheep were to be handled. On any farm where sheep were kept, paddocks should be not more than 50 acres in extent. Unless the lucerne was sown in comparatively small paddocks, the sheep would linger over one or two places and eat out the plants. Peas could be sown for grazing or harvesting. If the crop was sown early, the plants made an abundant growth of haulms and foliage at the expense of the peas. In the opinion of the Director, early-sown peas should be sown with a bush of oats in order to support the plants. If sown early in April, the sheep could be turned into them during June. At that time feed was scarce, and if managed carefully the crop could be grazed until October. Peas could also be sown in July, but they did not make the same growth as those planted earlier in the year. They could be grazed in the green stage or the peas could be allowed to ripen, when the sheep could graze off the crop as dry feed. The sheep would feed on them through nearly the whole of the summer.

At the conclusion of the Conference, visitors from the city and delegates from neighboring Branches were entertained at a banquet, when a lengthy toast list was honored.

Special reference was made by many of the speakers to the success of the Conference, which was largely due to the efforts of the Hon. Secretary of the Georgetown Branch (Mr. W. A. Hill).

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IMPORTS AND EXPORTS OF FRUITS, PLANTS, ETC., DURING THE MONTH OF MARCH, 1925.

IMPORTS.

Interstate.

Apples (bushels)	6,734
Bananas (bushels)	9,127
Grapes (bushels)	1
Passion fruit (bushels)	117
Peaches (bushels)	2,845
Pears (bushels)	20
Pineapples (bushels)	261
Tomatoes (packages)	17
Onions (bags)	834
Potatoes (bags)	13,555
Swedes (packages)	50
Bulbs (packages)	43
Plants (packages)	24
Seeds (packages)	37
Wine casks (empty)	4,282

Fumigated—20 wine casks.

Rejected—1bush. apples, 30bush. bananas, 1bush. grapes, 15bush. pears, 5bush. pineapples, 148 second-hand cases.

Overseas.

Federal Quarantine Act.

Seeds, &c. (packages)	1,416
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EXPORTS.

Federal Commerce Act.

19,818 packages fresh fruit, 2,262 packages dried fruit, 1 package jam, 8 packages honey were exported to overseas markets. These were consigned as follows:—

London.

Apples	16,352
Pears	2,382
Grapes	100
Dried fruit	884
Jam	1

New Zealand.

Dried fruit	1,353
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India and East.

Apples	514
Pears	45
Grapes	425
Dried fruit	25

Germany.

Honey	8
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ADVISORY BOARD OF AGRICULTURE

The monthly meeting of the Advisory Board of Agriculture was held on Wednesday, April 8th, there being present Capt. S. A. White, C.M.B.O.U. (Vice-Chairman), Col. Rowell, Hon. W. G. Duncan, M.L.C., Messrs. A. M. Dawkins, W. J. Colebatch, B.Sc. (Agric.), M.R.C.V.S. (Principal of the Roseworthy Agricultural College), C. J. Tuckwell, F. Coleman, H. Wicks, H. S. Taylor, F. Julius (Conservator of Forests), C. A. Loxton, B.V.Sc. (Chief Inspector of Stock), A. B. Feuerherdt, Dr. A. E. V. Richardson (Director Waite Research Institute), and the Secretary (Mr. H. J. Finnis).

Apologies were received from Mr. W. S. Kelly (Chairman), Professor A. J. Perkins, Messrs. P. H. Jones, L. Cowan, B.Sc. (Agric.), and J. W. Sandford.

Welcome to New Member of the Board.—Capt. S. A. White (Vice-Chairman), on behalf of the Board, extended a cordial welcome to Dr. Richardson, who was recently appointed a member of the Board. Dr. Richardson, in thanking Capt. White for his kindly words of welcome, stated that the work of the Waite Institute would be confined chiefly to agricultural research, but later on it would be necessary to carry the results of the work to the man on the land, and in that direction he would be glad to co-operate with the Agricultural Bureau.

Rural Household Science.—The secretary reported that a resolution had been carried at the Clare conference asking the Advisory Board of Agriculture to make arrangements for a rural household science course in Adelaide during the coming year. A reply was received from the Minister intimating that, in view of the financial position, he did not approve of the suggestion. On the motion of Mr. A. M. Dawkins, seconded by Mr. H. Wicks, it was decided that the Chairman (Mr. W. S. Kelly) and Mr. F. Coleman should discuss the matter with the Minister.

Tractor Trial.—A suggestion that a trial of tractors should be undertaken by the Department was deferred for consideration at a future meeting.

Visits to Women's Branches by Medical Staff of the Education Department.—The Secretary reported that from time to time letters were received from Women's Branches of the Agricultural Bureau, asking for lectures by Dr. Halley, of the Education Department, and in accordance with the requests of the Bureau he had asked the Minister whether it would be possible for the services of Dr. Halley or her assistants to be made available to address the Women's Branches. The matter had been referred to the Director of Education, who stated that Dr. Halley's new duties would prohibit her from delivering lectures in country centres, but he said there would be no objection to other medical officers of the Department undertaking such work, so long as it did not interfere with their ordinary work.

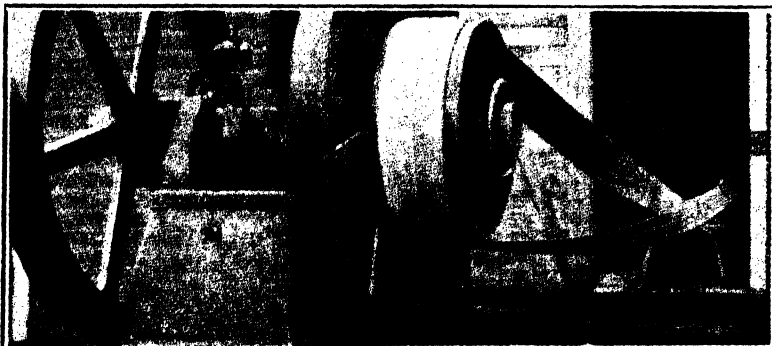
Duty on Dates.—The Clare Conference carried the following resolution:—"That this Conference urges the Federal Government to increase the duty on imported dates." After a lengthy discussion the Board decided that the subject was one with which they were unable to deal.

Experimental Farm for Kangaroo Island.—At a Conference of Agricultural Bureau on Kangaroo Island it was resolved "That the Department of Agriculture should be allowed a sufficient sum of money to enable operations to be undertaken on the area of land set aside for experimental purposes in the hundred of McGillivray." The Director of Agriculture, who was asked to report on the matter, said that as a farming proposition Kangaroo Island no doubt presented problems of its own, and from the point of view of professional interest he would certainly be glad to be able to undertake the work. On the other hand, so much had been said during recent years in Parliament with regard to the cost of running experimental farms that he would not feel justified in recommending additional expenditure unless he were thoroughly satisfied that the returns in the way of increased island revenue would warrant it. On this point he was bound to say that he had his doubt. It was true that the island was more than a million acres in area, of which 400,000 acres only were in occupation. On the other hand, the area under crop in 1923 had been 9,700 acres only, and the total number of hands, male and female, occupied in farming, dairying, and pastoral occupations, only 250. It was true that the Government Statist estimated the area suitable to wheatgrowing at 39,334 acres. To what extent that estimate was correct appeared to him to be very debatable. It seemed more than likely that in course of time Kangaroo Island would be developed as a general holiday resort, particularly if the fauna and flora reserve was extended. Hence, in view of the general difficulties of the case, he regretted that he could not at present recommend the expenditure of money on the lines desired by the Kangaroo Island Branches. In view of the report of the Director the Board decided that no further action should be taken.

Prices of Overseas Produce in the "Journal of Agriculture."—The Conference of South-Eastern Branches of the Agricultural Bureau resolved, "That the prices of all overseas produce be published in the *Journal of Agriculture*," and "That the price of cornsacks be published in the *Journal of Agriculture*." It was decided to refer the resolutions to the Editor of the *Journal*.

Wheat Grading.—The South-Eastern Conference also resolved that a system of wheat grading should be adopted by the Government, and that producers should be paid for their wheat according to grade. The Board was of the opinion that the suggestion of the Conference would not be practicable until bulk handling was introduced.

Wheel Tax.—The Mid-Northern Agricultural Bureau Conference resolved, "That in the event of a Bill not being brought before Parliament by September on the roads question, the option of Congress be



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obtained on the advisability or otherwise of a wheel tax. The Board decided that the question was one which should be brought before the local government representatives for the district.

Size and Quality of Cornsacks.—The Mid-Northern Conference also resolved that steps should be taken to ensure that cornsacks were of uniform size and quality. The Secretary was instructed to bring the matter under the notice of the Customs Department.

Fire Fighting Committees.—The following resolution was also carried at the Mid-Northern Conference:—"That this Conference commends to district councils the wisdom of appointing fire controllers and fire fighting committees, and asks the Advisory Board of Agriculture to request Branches of the Agricultural Bureau to urge upon their district councils to take the necessary steps to appoint fire controllers." The Board agreed to the proposal.

Congress, 1925.—The Chairman of the Advisory Board, Dr. A. E. V. Richardson, Professor A. J. Perkins, Mr. W. J. Colebatch, and the Secretary of the Board (Mr. H. J. Finnis) were appointed as a committee to make arrangements for the 1925 Annual Congress.

Departmental Exhibit at the Exhibition.—On the motion of Mr. F. Coleman, seconded by Mr. H. S. Taylor, the Secretary was instructed to forward a letter of congratulation to the Director complimenting the Department on the excellent exhibit that had been staged at the Exhibition.

Life Membership.—A proposal from the Strathalbyn Branch that a member of that Branch should be honored with life membership of the Agricultural Bureau was refused, because the member had not been associated with the Bureau for 20 years.

New Members.—The following names were added to the rolls of existing Branches:—Yeelanna—G. Duggin; Hartley—R. Smith; Wudinna—M. Bartley; C. W. Johns, C. R. White, A. M. Byrne, A. J. Byrne, C. Bassham; Penneshaw—P. G. Clark, A. E. McHugh; Gladstone—H. Gale; Wynarka—E. Pape, G. Hood, H. H. Hartley; Morphett Vale—G. Burr, N. Tank; Brinkworth—H. G. Weckert, A. B. A. Weckert, J. Lloyd; Mundalla—C. Fallon, T. Jorden; Poochera—L. King; Miltalie—A. C. Parish, I. P. Francis; Saddleworth Women's—Miss E. Ricketts; McLaren Flat—R. Bennett; Clanfield—F. Maynard; W. Maynard, H. Maynard, H. L. Billing; Pinnaroo Women's—Mrs. Fisk; Younghusband—W. Schmidt, F. Weinert; Yadarrie—H. H. Jackson, P. Elliott, H. Swingler, R. Cox; Murray Bridge—M. Martin, F. J. Bateman; Bunora—V. Clements; Tarlee—H. Evans; Elbow Hill—J. Rehn, sen., H. Rehn; Charra—F. Brooks, L. R. Tudor, L. Wright; Petina—A. E. Daniels, E. G. Rowe, A. Dobson; Coonawarra—C. Skirmer; Parilla—B. W. Sutherland, E. Dabinett; Port Elliot—H. S. Cope, O. B. Hutchinson, jun.; Streaky Bay—J. A. Mudge; Booleroo Centre—A. Adams; Kapunda—E. Ludewig; Marama—T. C. Hinkley; Murraytown—H. Williams; Gawler River—C. S. Nankivell; Williams-town Women's—Mrs. N. Hutchins; Strathalbyn—G. Rose, G. D. Lintern; Blackwood—J. Squires, H. Goldsack, N. V. Magarey.

BOOBOROWIE EXPERIMENTAL FARM, 1924 HARVEST REPORT.

The Government Experimental Farm, Booborowie, during 1924 experienced a satisfactory season. The total rainfall for the year, 24.58in., was above the average, as was also the "useful" rain (April to November), 19.37in. Good summer rains, and a satisfactory fall in April resulted in the fallows being well worked before seeding; most of the weeds were thus destroyed, and such conditions enabled seeding operations to be carried out without delay.

The area of this farm is 1,484 acres. It consists of two blocks, one the old North Booborowie homestead, which runs to the highest point in the Brown's Hill range and includes part of the old stock road, and the other two miles from the homestead, 298 acres of practically level land. Typical cereal growing land and grazing land form a greater part of the farm, and the recently acquired block of the stock road has added some second-class lucerne land to the area.

Cropping.—During the season under review, some 300 acres were cropped with cereals, 8 acres carrying ensilage crops, 77 hay, 34 oats, 25 barley, and 157 wheat. The area cut for ensilage carried Calcutta oats sown at the rate of 80lbs. seed to the acre, with a dressing of 1cwt. of superphosphate. An average return of 8 tons of greenstuff per acre was cut from this field.

Roughly, half of the area cut for hay was stubble land. The average return was 2 tons 4cwt. 31lbs. per acre, which is slightly above the mean yield of the farm for the past 13 years, namely, 2 tons 3cwt. 19lbs.

With the exception of 4 acres of fallow, oats for grain were grown on stubble land. A return of 27bush. 15lbs. was secured, the highest individual yield being obtained from Kherson variety, which gave 49bush. 16lbs. The average oat yield for the year 1924 is slightly below the mean yield for the past 12 years, namely, 28bush. 17lbs.

Barley was grown on stubble land only, the average yield was 22bush. 23lbs. as compared with the average yield for the past ten years of 28bush. 5lbs.

Wheat Crops.—As is usual on the Government Experimental Farms, an assortment of wheat varieties was grown at Booborowie this year. The best produced a yield of 37bush. 50lbs. per acre, whereas the return received from the poorest was 16bush. 25lbs. per acre. Testing varieties is essentially one of the operations of an experimental farm, which has the inevitable effect of reducing the wheat yields considerably below those that could be expected were only the highest-yielding varieties grown.

All the wheat at Booborowie during 1923-24 was grown on fallowed land, the rate of seeding being 75lbs. per acre with a manurial dressing of 2cwt. per acre. The average yield secured for the farm was 29bush. 37lbs., and those varieties which yielded above the average were:—Nabawa, 37bush. 50lbs.; Nungarin, 37bush. 37lbs.; Merridin, 37bush. 26lbs.; Nangeenan, 37bush. 17lbs.; Dan, 36bush. 52lbs.;

Carrabin, 35bush. 51lbs.; King's White, 33bush. 27lbs.; Marshall's No. 3, 33bush. 24lbs.; Caliph, 33bush. 50lbs.; Onas, 32bush. 24lbs.; Geeralying, 31bush. 44lbs.; Yandilla King, 30bush. 43lbs.

The average yield secured at Booborowie during the past 13 years has been 25.49bush., and when it is remembered that a number of the varieties grown are obviously not suited to the locality, this must be considered a satisfactory return.

Experimental Work.—The principal experimental work now being done on this farm is conducted on permanent experimental plots, an outstanding advantage of this being the elimination of residual effects of fertilisers. Various series of permanent experiments dealing with wheat in bare fallow-wheat rotation, and covering manurial, cultivation, and depth of ploughing tests, were commenced in 1916. The plots are so arranged that one-half of each is fallowed every alternate year, the half fallowed one year carrying a crop the following year, and *vice versa*. Details of results of these plots will appear in the *Journal of Agriculture*.

GLENCOE HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR FEBRUARY, 1925.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during February.	Per Cow during February.	Per Cow October to February.	Per Herd during February.	Per Cow during February.	Per Cow October to February.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
3/A	17-14	16-14	8,866	517-27	4,301-54	361-20	21-07	172-16
3/B	13	13	5,600	430-77	2,636-71	234-14	18-01	109-72
3/C	12	7-64	3,977	331-42	3,902-26	167-86	13-99	149-80
3/D	12	11	8,583	715-25	3,640-76	290-64	24-22	129-24
3/E	13	12-57	8,398	646-00	3,930-33	341-42	26-26	163-51
3/G	14-32	12	6,370	444-83	3,065-07	245-80	17-16	112-98
3/I	11	8-25	4,781	434-64	3,464-20	198-81	18-07	139-84
3/J	21	20	8,302	396-33	2,764-58	373-90	17-80	110-97
3/K	21-44	18-61	10,197	476-60	2,962-87	481-00	22-43	125-92
3/L	22	16-18	7,849	356-77	2,563-62	353-89	16-09	107-44
3/M	12	11	4,788	399-00	2,673-75	218-91	18-24	110-71
3/N	23-96	21-96	9,353	411-23	3,227-03	466-43	19-47	134-84
3/O	17	17	9,240	543-53	3,048-16	381-39	22-43	120-41
3/P	17	16	7,434	437-29	3,265-05	293-47	17-56	125-47
3/Q	37-14	36-14	14,660	394-72	2,740-17	709-02	19-09	117-79
3/R	17	14-36	7,978	469-30	3,772-22	378-98	22-28	172-00
3/T	20	20	8,848	442-40	3,985-54	393-29	19-66	167-55
3/U	22-68	19-89	10,559-5	445-92	2,871-24	464-69	19-62	115-65
3/V	17	16-36	6,743	396-65	2,656-29	290-05	17-06	107-61
Means	17-98	16-22	8,054-03	447-87	3,193-93	349-99	19-46	130-62

NARRUNG HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR FEBRUARY, 1925.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during February.	Per Cow during February.	Per Cow October to February.	Per Herd during February.	Per Cow during February.	Per Cow October to February.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
5/A	79	67-07	16,862	213-44	1,680-61	817-07	10-34	79-21
5/B	30-89	27-36	13,877	449-24	2,635-96	674-99	21-85	130-45
5/C	19	16-11	6,669-5	351-03	3,057-50	344-13	18-11	142-67
5/D	39-07	20-71	9,858	252-32	1,583-65	533-49	13-65	83-12
5/E	54-21	37-04	18,996-5	350-42	2,288-66	892-79	16-47	107-33
5/F	26-54	26-54	10,410-5	392-26	3,178-64	497-08	18-73	139-93
5/G	23	20-89	6,820	296-52	2,489-02	333-42	14-50	115-16
5/H	41-36	24-25	7,955-5	192-35	1,447-11	413-86	10-01	77-49
5/I	36-39	26-50	11,701	321-54	2,125-52	580-46	15-95	97-48
5/J	39-50	19-79	9,689-5	245-30	1,631-54	463-97	11-75	77-17
5/K	49	14-43	5,464	111-51	1,765-73	278-77	5-69	82-94
5/L	35	14-39	3,540	101-14	1,920-02	198-29	5-67	89-55
5/M	23	13-36	3,170	137-83	1,855-07	156-34	6-80	87-50
5/N	32	30	12,169	380-41	2,948-53	598-96	18-72	134-67
5/O	40-61	30-93	12,742	313-77	2,250-96	584-43	14-39	99-43
5/P	34-57	27-57	10,070	291-29	2,159-03	485-44	14-04	104-75
5/Q	27	17-64	7,008	259-56	2,254-29	355-36	13-16	112-95
5/R	82-07	62-07	22,846	278-31	1,487-53	1,094-46	13-33	69-05
5/S	36-96	21-71	9,041	244-61	1,444-74	415-70	11-25	67-42
Means	39-43	27-28	10,467-87	265-48	2,013-83	511-53	12-97	95-21

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These birds have been bred from Imported Victorian Stock.

RIVER MURRAY HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR FEBRUARY, 1925.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during February.	Per Cow during February.	Per Cow October to February.	Per Herd during February.	Per Cow during February.	Per Cow October to February.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1/J	15	9-71	7,542	502-80	2,786-09	307-28	20-49	116-82
1/L	18	13-54	10,308	572-67	2,746-52	439-92	24-44	116-66
1/M	18-29	15-71	10,617	580-48	3,054-45	537-96	29-41	155-63
1/E	21-30	19-75	13,030-5	609-18	3,047-96	569-47	26-62	131-74
1/G	26	23-18	18,448	709-54	4,124-34	742-24	28-55	159-58
1/T	14	8	5,824	416-00	2,640-57	295-54	21-11	132-58
1/X	19	17-08	12,994	683-89	3,389-23	602-41	31-71	151-98
1/F _F	17-57	12-04	6,954	395-78	2,969-43	301-81	17-18	133-01
1/G _G	22-86	13-21	8,976	392-65	2,452-95	390-20	17-07	113-26
1/I _I	23-93	15-96	12,048	503-47	3,531-22	556-93	23-27	157-20
1/J _J	24-86	16-11	8,621	346-78	2,211-55	381-11	15-33	100-45
1/M _M	19	9-29	6,784	357-05	1,674-53	305-78	16-09	76-24
1/N _N	16-75	16-75	11,963	714-21	3,804-04	466-12	27-83	155-57
1/O _O	19	18-46	10,142	533-79	3,217-45	473-38	24-91	146-45
1/P _P	24-11	20-86	14,851-5	615-98	2,594-40	539-99	22-40	97-97
1/Q _Q	22	17-68	6,942	315-55	756-59	307-82	13-99	34-84
Means	20-11	15-50	10,377-81	516-05	2,902-05	451-12	22-43	127-05

MOUNT GAMBIER HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR MARCH, 1925.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during March.	Per Cow during March.	Per Cow August to March.	Per Herd during March.	Per Cow during March.	Per Cow August to March.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
2/K	25	21-48	15,473	615-08	4,806-51	626-65	24-88	199-35
2/L	21-32	16-45	8,519-5	399-59	4,279-04	405-34	19-01	191-45
2/Y	14	11-84	7,272	519-43	5,829-35	291-87	20-85	235-26
2/D _D	19	16-48	8,707-5	458-29	6,138-90	364-16	19-17	260-98
2/E _E	15	14-06	6,198	413-20	5,474-53	276-91	18-46	242-25
2/F _F	11	11	6,572	597-45	6,689-42	279-35	25-40	277-52
2/G _O	12	9	3,921-5	326-79	4,370-03	176-19	14-68	181-96
2/H _H	9	7-35	4,218	468-67	5,725-31	177-62	19-74	226-96
2/I _I	11	10-39	4,571-5	415-59	5,674-26	201-80	18-35	245-29
2/J _J	28	17-23	10,383	370-82	3,552-66	395-77	14-13	137-04
Means	16-53	13-53	7,583-60	458-72	4,957-98	319-57	19-33	206-69

MILANG HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR FEBRUARY, 1925.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during February.	Per Cow during February.	Per Cow May to February.	Per Herd during February.	Per Cow during February.	Per Cow May to February.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
4/A	26	8-43	3,038	116-85	4,013-25	146-96	5-65	176-51
4/B	38	21-86	4,657-5	122-57	3,961-09	210-49	5-64	158-53
A/C	29-32	19-57	8,995	306-79	3,829-45	385-66	13-15	158-27
4/D	21	10-36	2,711	129-10	6,548-93	117-41	5-69	253-23
4/E	21	7-46	1,578-5	75-17	3,708-85	72-23	3-44	143-44
4/F	20	14-79	6,386	319-30	3,891-23	286-99	14-35	168-63
4/G	27	19-04	7,732	286-37	3,767-14	359-26	13-31	152-12
4/H	31	21-89	7,964	256-90	4,544-34	346-38	11-17	188-30
4/I	33	24-11	8,481	257-00	4,125-36	409-63	12-41	184-83
4/J	53	43-43	17,426	328-79	4,483-71	718-85	13-56	171-26
4/K	16	13-64	5,320	332-50	4,086-59	248-18	15-51	181-70
4/L	34	24-04	12,324-5	362-49	3,870-33	605-89	17-82	184-07
4/M	21-36	13-89	4,907	229-73	3,857-87	213-37	9-99	154-45
4/N	40-21	18-96	4,078	101-44	5,498-46	178-47	4-44	224-90
4/O	43	21-68	3,678	85-53	5,547-88	182-12	4-24	228-63
4/P	64	40-36	9,435	147-42	2,566-77	411-60	6-43	100-08
4/Q	50-25	42-82	25,897-5	515-37	4,627-79	1,102-40	21-94	185-10
4/R	16	15	5,418	338-63	5,085-30	270-79	16-92	236-31
Means	32-45	21-19	7,779-28	239-72	4,274-42	348-15	10-73	176-06

AUTUMN AND WINTER EGGS.

"If your birds are of good laying strain they must be properly housed if you expect eggs in autumn and winter." said the Poultry Expert (Mr. D. F. Laurie), in advising a correspondent. "Pullets must be bred at the proper season, hatched out not later than end of September. Feeding must be on wet mash in the mornings, green food chaffed, or light feed of grain midday, and grain again half an hour before sunset. Plenty of fresh water, shell grit, and quartz grit should be available. Mash for 100 fowls can be made of:— Bran, 3½lbs.; pollard, 7lbs.; meat meal, 1lb.; salt, 1oz.; chaffed green food, half kerosine-tin. Make soup of the meat meal, add salt, scald the bran, and then add green food. Mix well, then add the pollard, and mix well to a crumbly mash. Give as much as the birds will clean up in 25 minutes. Grain—wheat, or wheat half, oats half—6lbs. per 100 birds."

DAIRY AND FARM PRODUCE MARKETS.

A. W. Sandford & Co., Limited, reported on May 1st, 1925:—

BUTTER.—Throughout the month under review values for top grade butters have had a firming tendency, in fact since our last report values have recorded a further advance of 1d. per lb., the reason being that the local production is very short, and heavy quantities have had to be imported from the eastern States to fill requirements. In some instances the surplus stocks of low grades have been shipped to England, as local demand for butter of this quality has been slow. The dry weather experienced in this and other States is causing decreasing quantities of butter to arrive weekly, and a general rainfall in the dairying districts is anxiously awaited. Choicest factory and creamery fresh butter in bulk, 1s. 7½d.; first grade bulk, 1s. 1½d.; second and third grade bulk, 1s. to 1s. 0½d.; best separators and dairies, 1s. 4d. to 1s. 6d.; fair quality, 11½d. to 1s. 3d.; stores and collectors' lines, 11d. to 1s. 2d. per lb.; stale lots down to 9d. per lb.

EGGS.—A seasonable shrinkage in supplies was again felt this month, which was responsible for a marked improvement in values. Although many interstate inquiries were made, no business resulted, the local trade readily absorbing all forwardings, values at present being:—Fresh hen, 1s. 8½d.; duck, 1s. 9½d. per dozen.

CHEESE.—Several fluctuations have occurred in values of new makes, and as interstate sellers were offering at lower figures, local rates came back; but the market has re-acted, as supplies have become short. In fact, during the last week both local and interstate orders had to be curtailed. The shortage of new makes has forced buyers to operate for lines of semi-matured and matured, of which heavy stocks are held and for some time past sales have been dull, the range for new makes being 8d. to 9d. per lb. for large to loaf; semi-matured and matured, 9d. to 10½d. per lb. for large to loaf.

HONEY.—Exceptionally heavy consignments continue to arrive weekly, but in spite of this fact the values have improved, that is for the new season's prime liquid lots, as the interstate demand is keen for this quality. However, sales of the lower grades are negligible, prime clear extracted in liquid condition being 3½d. to 4d.; best quality candied lots, 3d. to 3½d.; lower grades down to 2d. Beeswax, 1s. 4d. to 1s. 4½d.

ALMONDS.—According to reports, this season's crop of almonds is disappointing as regards quantities, which is unfortunate, as the demand is good, and all forwardings of almonds in the shell are being readily absorbed at slightly advanced rates. Kernels are still short of requirements, and realising high values. Brandis, 9½d. to 9½d.; mixed softshells, 8½d. to 9d.; hardshells, 4½d.; kernels, 2s. 1d. to 2s. 1½d. per lb.

BACON.—Local curers have been in a much better position as regards supplies, as they hold ample stocks of all lines. The trade has been paying most attention to purchasing hams and sides. Several casings have taken place in values, which are as follows:—Best local hams, 1s. 6d. to 1s. 6½d.; best factory cured sides, 1s. 3d.; best factory cured middles, 1s. 3½d. to 1s. 4½d.; Hutton's "Pineapple" brand sides, 1s. 3d.; Hutton's "Pineapple" brand rolls, 1s. 2½d.; Hutton's "Pineapple" brand middles, 1s. 7d.; Hutton's "Pineapple" brand hams, 1s. 8d.

LARD.—Hutton's "Pineapple" brand lard, in packets 9d., in bulk 8d. per lb.

LIVE POULTRY.—Unfortunately, quite a number of consignors held back their surplus birds until the last two or three markets before Easter, with the result that the market was over-supplied, and as poulterers, restaurant-keepers, &c., could not handle the birds in time for their requirements, values eased considerably so as to effect clearances. However, with the other markets values throughout were good, the bidding being very keen, especially for prime-conditioned birds. During the last week heavy quantities have been catalogued, but the demand is very strong indeed, and values have, if anything, recorded a slight improvement. We advise

forwarding. Crates obtainable on application. The following rates ruled to-day:—Prime roosters, 5s. to 6s. 9d.; nice-conditioned cockerels, 3s. 3d. to 4s. 9d.; fair-conditioned cockerels, 2s. 3d. to 3s.; plump hens, 3s. 3d. to 5s.; medium hens, 2s. to 3s.; couple of pens lower. Geese, 5s. 6d. to 6s. 6d.; ducks, good conditioned, 4s. to 5s. 6d.; ducks, fair conditioned, 2s. to 3s. 6d.; ducklings lower; turkeys, good to prime conditioned, 1s. 2d. to 1s. 6d. per lb. live weight; turkeys, fair conditioned, 1s. to 1s. 1½d. per lb.; turkeys, fattening sorts lower; pigeons, 10d. each.

POTATOES.—Prime Gippisland Carmens, at 11s. to 12s. 6d. per cwt. on rail.

ONIONS.—Best brown onions, at 16s. per cwt. on rail.

LUCERNE.

The following questions, numbered 1 to 5, were submitted by a landholder on Eyre Peninsula. Replies were supplied by the Chief Agricultural Instructor (Mr. W. J. Spafford). They are printed below:—

1. When is the proper time to plant Hunter River lucerne?

In your district best results will be obtained if the seed is put into the land on the first good seeding rain in the autumn. The land should be prepared in readiness, and if a good rain falls in April, the seed can then be sown; but rather than risk this expensive seed, it would pay to wait for a good "germinating" rain until well into May.

2. Would it be safe to sow seed mixed with superphosphate through the ordinary seed drill?

Small seed, such as lucerne, should never be sown deeply, but provided (a) the soil is moist enough to germinate the seed properly, (b) the seed and superphosphate are only mixed immediately before they are put into the drill, and (c) the drill can be adjusted to make tracks so shallow that the mixture will be barely covered, it is safe enough to mix the two together.

Failing mixing the seed with superphosphate, the manure should be drilled in, the land rolled, the lucerne seed broadcasted, and the land again rolled. If no roller is available, the seed can be broadcasted after drilling in the manure and no attempt made to cover it.

3. What quantity of lucerne seed should be used?

In really good lucerne-growing conditions, with very fertile soils and good underground water not very far from the surface, where the crop will last from 15 to 20 years, about 20lbs. seed should be used per acre, but where you cannot expect the crop to last more than six to 10 years, about 12lbs. seed per acre is sufficient to give a very fair crop.

4. What fertiliser should be used?

A lucerne crop needs at least 1cwt. superphosphate per acre per year, and best returns are likely to be got if it is seeded with 2cwts. or 3cwts. of manure, then it need not be dressed again for two or three years.

5. Fresh water floods over the land in wet seasons, and in odd years might lie about for three weeks; will this destroy the lucerne?

If the water is not too saline, and does not lie on the land for more than three weeks in the winter, it should not injure the crop to any great extent.

RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of, and to the end of, April, 1925, also the average precipitation to the end of April, and the average annual rainfall.

Station.	For April, 1925.	To end April, 1925.	Av. end April.	Av'gs. Annual Rainfall	Station.	For April, 1925.	To end April, 1925.	Av. end April.	Av'gs. Annual Rainfall
FAR NORTH AND UPPER NORTH.					LOWER NORTH—continued.				
Oodnadatta	0-22	1-15	2-05	4-96	Gulnare	1-53	3-77	3-05	19-48
Marree	0-18	2-45	1-84	6-03	Yacka	1-42	3-04	2-95	15-56
Farina	0-41	3-36	2-18	6-66	Koolunga	1-33	3-25	3-16	15-95
Copley	0-64	2-24	2-47	8-35	Snowtown	1-75	3-04	3-14	16-09
Beltana	0-60	3-86	2-72	8-95	Brinkworth	1-66	5-39	2-78	16-39
Blinman	0-47	3-01	3-42	12-51	Blyth	1-69	2-99	3-42	17-07
Tarcoola	0-15	1-50	2-41	7-64	Clare	1-76	4-03	4-66	24-80
Hookina	1-30	1-80	2-59	13-29	Mintaro	1-46	3-36	3-88	23-86
Hawker	0-84	2-42	2-73	12-04	Watervale	1-65	3-06	5-14	27-64
Wilson	0-98	2-00	2-79	12-63	Auburn	1-38	2-86	5-83	24-41
Gordon	0-50	3-85	2-76	11-52	Hoyleton	1-08	2-25	3-67	17-91
Quorn	0-59	1-48	2-97	14-26	Balaklava	1-40	2-71	3-47	15-98
Port Augusta	1-62	2-06	2-61	9-68	Port Wakefield	1-45	1-82	3-35	13-28
Port Augusta West	1-71	2-17	2-36	9-70	Terowie	0-59	4-97	3-17	13-82
Bruce	0-53	1-05	2-45	10-79	Yarcowie	0-71	4-78	3-26	14-19
Hammond	0-74	1-29	3-39	12-02	Hallett	1-15	4-09	3-18	16-53
Wilmington	1-04	1-14	3-77	18-41	Mount Bryan	0-89	3-24	2-94	17-13
Willowie	1-09	1-54	2-73	12-79	Kooringa	0-77	2-02	3-66	18-14
Melrose	1-54	3-48	4-89	23-53	Farrell's Flat	1-17	2-58	3-62	19-09
Booderoo Centre	1-33	2-79	3-32	16-82	WEST OF MURRAY RANGE.				
Port Germein	0-97	1-49	3-04	12-90	Manoora	1-13	2-46	3-44	19-12
Wirrabara	1-14	2-23	3-85	19-85	Saddledworth	1-16	2-47	4-13	19-89
Appila	1-08	2-47	3-43	15-05	Marrabel	1-02	2-19	3-85	20-00
Cradock	1-11	2-94	2-63	11-53	Riverton	0-99	1-96	4-25	20-97
Carrieton	1-00	2-12	2-82	12-95	Tarlee	0-99	2-15	3-78	18-18
Johnburg	1-12	2-81	2-41	10-99	Stockport	1-45	2-91	3-50	16-89
Eurelia	0-92	2-49	2-72	13-62	Hamley Bridge	1-55	3-50	3-61	16-82
Orroroo	1-01	1-93	3-35	13-73	Kapunda	1-22	2-72	4-20	20-04
Nackara	0-73	5-29	2-94	11-85	Freeling	1-08	2-59	3-75	18-19
Black Rock	1-17	2-34	3-05	12-83	Greenock	1-15	2-74	4-18	21-93
Uoolta	0-57	2-19	2-62	11-91	Truro	1-13	3-02	3-09	20-43
Peterborough	0-94	3-05	3-22	13-60	Stockwell	1-34	3-48	4-02	20-58
Yongala	1-12	3-70	3-14	14-73	Nuriootpa	0-88	3-14	4-03	21-17
LOWER NORTH-EAST.					Angaston	1-56	4-06	4-25	22-71
Yunta	0-91	2-24	2-50	8-79	Tanunda	1-06	2-58	4-40	22-40
Waukaringa	0-77	2-25	2-27	8-47	Lyndoch	1-40	2-74	4-09	23-41
Mannahill	0-18	2-08	2-56	8-62	Williamstown	1-47	3-64	4-73	27-75
Cockburn	—	1-85	2-36	8-29	ADELAIDE PLAINS.				
Broken Hill N.S.W.	0-07	3-16	2-82	9-99	Owen	1-21	3-62	—	—
LOWER NORTH.					Mallala	1-18	3-88	3-50	16-92
Port Pirie	0-98	1-60	3-16	13-58	Roseworthy	1-16	2-15	3-62	17-59
Port Broughton	0-96	1-70	3-03	14-33	Gawler	1-02	2-41	3-99	19-24
Bute	1-42	2-57	3-08	15-90	Two Wells	1-25	2-98	3-40	16-03
Laura	1-48	3-36	3-71	18-34	Virginia	1-07	2-87	3-60	17-51
Caltowie	1-53	3-41	3-56	17-27	Smithfield	1-52	2-09	3-21	17-62
Jamestown	1-07	3-56	3-56	18-04	Salisbury	1-17	2-56	3-93	18-76
Gladstone	1-63	2-65	3-39	16-42	North Adelaide	1-23	8-92	4-27	22-66
Crystal Brook	1-33	3-18	3-28	16-00	Adelaide	1-08	7-96	4-20	21-18
Georgetown	1-54	3-06	3-77	18-64	Glenelg	1-20	3-16	3-64	18-63
Narridy	1-12	2-45	3-39	16-36	Brighton	1-07	2-48	3-95	21-06
Redhill	1-46	2-57	3-43	17-38	Mitcham	1-09	5-08	4-46	24-54
Spalding	1-00	3-90	3-19	20-24	Glen Osmond	1-06	4-52	4-77	26-34
					Magill	1-10	3-78	4-79	25-81

RAINFALL—continued.

Station.	For April, 1925.	To end April, 1925.	Av. end April.	Av'ge Annual Rainfall
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MOUNT LOFTY RANGES.

Teatree Gully.....	1.19	3.62	4.01	28.32
Stirling West	1.59	6.49	8.17	47.30
Uraidla	1.62	6.02	7.64	44.79
Clarendon	1.74	5.53	6.46	33.29
Morphett Vale	1.46	3.63	4.52	23.07
Noarlunga	1.35	2.89	3.97	20.56
Willunga	1.44	5.37	4.72	26.09
Aldinga	1.11	2.93	3.45	20.56
Myponga.....	1.76	3.80	4.16	30.35
Normanville	1.77	3.09	3.90	20.88
Yankalilla.....	1.77	2.90	4.29	23.59
Mount Pleasant ..	1.60	4.26	4.80	27.62
Birdwood	1.49	3.72	5.03	29.78
Gumeracha	1.57	3.96	4.71	33.69
Millbrook Reservoir	1.27	3.59	4.48	38.63
Tweedvale	1.07	5.26	5.72	36.12
Woodside	1.62	4.16	5.29	32.48
Ambleside.....	1.52	4.45	5.82	25.23
Nairne	1.38	3.65	5.28	28.63
Mount Barker	1.95	4.08	5.58	31.54
Echunga	1.34	6.06	5.95	33.41
Macclesfield	1.84	6.17	5.53	30.90
Meadows	1.68	5.56	6.52	36.61
Strathalbyn	1.36	4.67	3.89	19.45

MURRAY FLATS AND VALLEY.

Meningie	1.35	4.04	3.64	18.83
Milang	0.81	3.17	3.33	15.47
Langhorne's Creek	1.12	4.77	3.13	14.88
Wellington	0.92	3.69	3.40	14.85
Tailem Bend	1.10	4.67	2.94	14.92
Murray Bridge	1.31	3.60	3.28	13.98
Callington	1.00	3.01	3.30	15.56
Mannum	1.24	3.97	2.89	11.66
Palmer	1.14	3.71	2.94	15.58
Sedan	1.39	3.83	2.74	12.37
Swan Reach	0.83	3.73	2.43	11.05
Blanchetown	0.60	2.58	2.60	10.01
Eudunda	0.81	3.48	3.57	17.53
Sutherlands	0.76	2.11	2.09	11.27
Morgan	0.73	5.57	2.15	9.26
Waikerie	0.16	3.83	4.17	9.79
Overland Corner ..	0.21	2.90	2.83	10.15
Loxton	0.27	2.58	2.95	12.36
Renmark	0.23	2.53	2.67	10.98
Monash	0.30	2.14	—	—

WEST OF SPENCER'S GULF.

Eucla.....	0.58	4.96	3.10	9.98
Fowler's Bay	1.15	2.00	2.23	12.14
Penong	1.15	1.55	2.61	12.61
Ceduna	1.32	2.22	1.34	10.25
Smoky Bay	1.96	1.54	1.82	11.16
Petina	0.53	0.94	1.97	13.12
Streaky Bay.....	0.86	1.83	2.53	15.11
Talia	0.59	1.25	1.88	15.36
Port Elliston	1.10	1.66	2.40	16.66
Port Lincoln	2.61	3.11	3.35	19.71
Cummins	1.46	3.08	1.90	18.85
Yeelanna	1.15	1.94	2.08	—
Ungarra	1.71	2.72	2.35	17.35

WEST OF SPENCER'S GULF—continued.

Dark's Peak	0.94	2.30	2.74	16.48
Kimba	0.98	1.96	2.95	15.85
Wudinna	0.27	2.22	—	—
Minnipa	0.06	2.74	2.91	15.32
Tumby	1.48	2.48	2.39	14.62
Carrow	1.07	1.59	3.46	14.31
Arno Bay	1.45	2.13	2.67	13.01
Cleve	1.25	2.69	3.07	—
Cowell	1.01	2.05	3.07	11.57

YORKE PENINSULA.

Walleroo	1.34	2.16	3.13	14.19
Kadina	1.34	2.06	3.37	16.08
Moonta	1.32	1.91	3.40	15.39
Green's Plains	1.14	1.75	3.05	15.97
Maitland	1.50	2.35	3.82	20.31
Ardrossan	1.24	1.67	2.93	14.25
Port Victoria	1.14	1.63	3.02	15.62
Curramulka	1.18	1.96	3.37	18.31
Minlaton	1.23	1.91	3.30	18.06
Brentwood	1.18	1.72	2.86	16.02
Stansbury	1.03	1.63	3.23	17.15
Warooka	1.54	1.95	3.01	17.97
Yorketown	1.05	2.13	3.06	17.35
Edithburgh	1.16	1.98	3.28	16.70

SOUTH AND SOUTH-EAST.

Cape Borda	2.83	4.00	3.93	25.18
Kingscote	3.31	4.12	3.19	19.15
Penneshaw	2.12	2.97	3.95	19.53
Victor Harbor	1.30	3.02	4.10	21.51
Port Elliot	1.44	3.72	4.00	20.17
Goolwa	1.33	4.71	3.72	17.87
Meribah	0.32	2.49	—	—
Alawoona	0.15	1.95	—	—
Mindarie	0.42	3.08	1.58	12.39
Sandalwood	0.44	3.03	2.26	14.98
Karoonda	0.64	3.62	2.14	15.32
Pinnaroo	6.28	3.98	3.18	15.60
Parilla	0.22	3.39	2.39	14.77
Lameroo	0.27	5.27	3.05	16.51
Parrakie	0.17	5.79	2.38	14.83
Geranium	0.43	5.04	2.79	16.83
Peake	0.48	4.27	3.22	16.86
Cooke's Plains	1.33	5.29	3.14	15.31
Coomandook	1.32	4.97	3.05	17.50
Coonalpyn	0.84	4.77	3.41	17.51
Tintinara	0.66	5.53	3.35	18.89
Keith	0.47	2.94	3.05	18.38
Bordertown	0.68	3.49	3.74	19.46
Wolseley	0.91	3.43	3.41	19.31
Frances	1.04	4.10	3.65	19.93
Naracoorte	1.25	2.95	4.24	22.63
Penola	1.44	4.60	4.03	23.10
Lucindale	1.25	3.06	4.02	24.53
Kingston	2.00	3.88	4.22	24.71
Robe	2.09	4.37	4.25	27.14
Beachport.....	2.26	5.11	4.78	29.51
Millioent	3.25	6.13	4.49	33.25
Kalangadoo	2.31	6.59	4.23	31.95
Mount Gambier ..	2.28	6.04	6.18	26.68

AGRICULTURAL BUREAU REPORTS.

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Alma	937, 939	12	9	Geranium	•	30	27
Amyton	•	11	8	Gladstone	†	8	5
Angaston	•	—	—	Glencoe	†	7	4
Appila-Yarrowie	•	—	—	Glossop	•	6	3
Arthurton	•	—	—	Goode	•	6	10
Ashbourne	•	—	—	Green Patch	•	4	1
Balaklava	•	9	13	Gulnare	A.M.	6	10
Balhannah	•	8	5	Gumeracha	•	11	8
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Belalie North	•	2	6	Hawker	•	6	9
Berri	•	6	10	Hilltown	•	—	—
Bethel	•	12	9	Hookina	†	7	4
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Brinkworth	936	4	1	Ki Ki	•	—	—
Bundaleer Springs	•	—	—	Kilkerran	944	7	4
Bunora	†	8	7	Kimba	•	—	—
Bute	•	7	2	Kingston-on-Murray	•	—	—
Butler	•	—	—	Kongorong	†	4	1
Calca	•	—	—	Koonibba	•	7	4
Cadell	•	—	—	Koppio	•	4	1
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Denial Bay	•	—	—	Mangalo	•	—	—
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Narrung	•	9	13	Veitch	•	—	—
Neeta	•	—	—	Virginia	•	6	3
Nelshaby	•	2	6	Waikerie	•	9	13
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New Residence	•	6	3	Wanbi	•	—	—
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Riverton (Women's).	•	—	—				

* No report received during the month of April. † Held over until next month.
A.M. Annual Meeting. R Recess.

THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA

Every producer should be a member of the Agricultural Bureau. A postcard to the Department of Agriculture will bring information as to the name and address of the secretary of the nearest Branch.

If the nearest Branch is too far from the reader's home, the opportunity occurs to form a new one. Write to the department for fuller particulars concerning the work of this institution.

REPORTS OF BUREAU MEETINGS. MIDDLE-NORTH DISTRICT.

(PETERBOROUGH TO FARRELL'S FLAT.)

BEETALOO VALLEY (Average annual rainfall, 23.50in.).

March 30th.—Present: 11 members and three visitors.

PREPARATIONS FOR DROUGHT.—In the course of a paper dealing with this subject, the Hon. Secretary (Mr. F. Bartrum) said that when travelling through country districts one could not fail to notice the small surplus stocks of fodder, over and above the year's requirements, held in reserve on many farms. It should be the aim of every farmer to put by a surplus stack of hay. He considered a good stack of hay to be the best method of conserving fodder. Straw, if cut immediately after harvest, stooked, and when carted sprinkled with salt or molasses, would provide a fodder which would keep the stock alive, but it would not be of much value for a team doing hard work. Their district was able to grow a variety of fodders which would make good ensilage, but that was a fairly expensive job. Lucerne could not be grown to any great extent owing to the springs not being sufficiently strong to allow of irrigation. For the conservation of fodder, he favored a good stack of hay, protected by a mouse-proof galvanized-iron fence. In the discussion that followed, Mr. Clogg considered a mouse-proof fence around the stack a wise precaution to save the hay from vermin and fire. Mr. Curtis thought it advisable to cut hay on the green side when it was intended to put it by for a number of years. The stack should be well thatched to keep out the wet. Members considered that a good stack of straw should be put by every year.

BLYTH (Average annual rainfall, 16.46in.).

March 14th.—Present: 21 members.

MARKETING WHEAT.—Mr. A. J. Webber, who read a paper on this subject, drew attention to the fact that of recent years Australia had been growing an increasing quantity of red wheat. He favored the imposition of a dock of 6d. per bushel on wheat grown of that type. Barley in wheat was becoming worse every year, and was caused largely by the carelessness and neglect of the farmer in not selecting seed reasonably free from barley. Inferior wheat, smut, pinched grain, etc., were also marketed. If the agent accepted inferior wheat and it was exported, it was eventually sold to a miller in another country, who purchased at the standard fixed by the exporting country. The standard for South Australia for the year 1924-25 was 62½lbs. per bushel. When the miller received parcels of inferior wheat, his custom and a market for the wheat would be lost. Again, some of the second-hand bags in which wheat was delivered were not fit receptacles to hold food that was to be used for human consumption. That also would tell against the sale of Australian wheat. Those matters could be rectified with a little care. Mr. Webber then referred to the channels through which the wheat was marketed. In the discussion that followed, Mr. A. L. McEwin thought too much prominence had been made of red wheats, which were not grown extensively enough to effect the quality of Australian wheats. Mr. Mullins thought that sufficient encouragement was not given to the farmer to produce a first-class sample with the present average f.a.q. standard, because there was no better

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price for a sample above the f.a.q., corresponding to the dock for under f.a.q. wheat. Mr. E. Lanyon thought there would be little difficulty in eradicating red wheats if farmers were sure of suitable substitutes.

BOOLEROO CENTRE (Average annual rainfall, 15.83in.).

March 12th.—Present: 12 members.

SPARE TIME.—Mr. H. Reichstein, who read a short paper dealing with this subject, said during those seasons of the year when the farmer was not engaged with actual farming operations, portion of the time should be devoted to repairing fences. Swings and chains should be overhauled, and the harness, especially the collars, should be lined, and winkers repaired and reins stitched. All harness should be oiled at least twice a year with pure neatsfoot oil. All shares should be sharpened and put on the implements ready for use when the first rains fell.

CONSERVATION OF FODDER.—Mr. C. W. Paterson, who read a paper dealing with this subject, said in districts that were subject to drought, it was necessary to conserve fodder to carry stock over lean years. Hay was one of the best fodders for conservation, but it was often considerably damaged by mice and rats. To prevent damage from vermin, he suggested the erection of galvanized-iron fences around the stacks. On a small holding a considerable portion of the crop was required to feed stock for the year, and make a reserve supply of fodder. In order to do that in an economical way, he suggested that the farmer should cut a small area of the crop just before it was ripe. The sheaves should be well stooked, and after harvest the crop could be carted in and thrashed. By that means the grain would be saved, and a very good quality straw would be secured, which, if preserved, would prove of great value in dry seasons or for mixing with hay when the horses were not working. For thrashing, he preferred oats, because they could be handled without any difficulty, and thrashing was one of the best means of harvesting oats, because there was no danger of waste through shaking. Oaten straw was better than wheaten straw for feeding to horses. Cocky chaff was also useful, but it was difficult to preserve. It should be stored in a shed, otherwise it became damaged by moisture. Clean straw raked and stacked could be fed to spare cattle in dry seasons. If a small quantity of molasses and salt were dissolved in water and sprinkled over each layer as the straw was being stacked it would improve the feeding value of the straw and add to the palatability of the fodder. In the discussion that followed, Mr. M. Carey thought that farmers when feeding horses during autumn could use old hay mixed with a small quantity of new hay. He believed that colic was often caused through changing horses too suddenly from old hay to new. Mr. W. Berry said if oats were reaped on the green side the stock would eat the straw without any trouble. Mr. T. Stanton said to obtain the best feeding value from straw it should be cut with a binder immediately after the crop was reaped. Mr. W. Mills stated that he had not noticed any ill effects from feeding discolored hay to horses so long as the hay was not damp.

BRINKWORTH.

April 6th.—Present: 35 members and eight visitors.

WHEAT PICKLING.—Mr. C. A. Ottens read a short paper on this subject. The writer favored a solution of 1½lbs. bluestone and 1½lbs. salt in 10galls. of water. The grain should be pickled about three weeks before sowing, and allowed to stand in a draught to ensure thorough drying as quickly as possible. In the discussion that followed, Mr. G. Adams favored dry pickling, because germination was not affected to the same extent as with the wet pickle. Mr. C. C. Ottens considered that weather conditions played an important part in the prevalence of smut.

MURRAYTOWN.

February 7th.—Present: 14 members and five visitors.

Members discussed items of interest relating to the 1924-5 harvest. It was estimated that the average wheat yield for the district was 28bush. to 30bush. to the acre.

On March 7th, Mr. H. D. Shields, a member of the Mount Remarkable Branch, attended the meeting and delivered an address, in which he related some of his experiences during a recent visit to Scotland.

DRIVING AND WORKING A TEAM OF HORSES.—At a further meeting, held on March 27th, a short paper dealing with this subject was read by Mr. A. Hill, in the course of which he stated that each horse in the team should be made to do its share of work. The team should not be rushed when heavy pulling had to be done, because that had a tendency to make "jibs" of the horses. Well-fitting collars and short round hames which fitted the collars should be used, and each horse should have a separate set of harness, which should be kept in good repair. When a horse had sore shoulders, the collar should be lined with a fresh sheep-skin, the woolly side to the collar, and in a few days the sores would be healed. If the team was working on the roads, the animals should be shod. Good food and clean water were essential if the horses were to keep in good condition and do their work properly.

MANNANARIE, March 19th.—Mr. A. Jones read a paper, "Farm Management," from the *Journal of Agriculture*. Members then discussed several points relating to diseases in sheep.

MANNANARIE, April 9th.—An interesting paper, "How to Spend a Holiday," was contributed by Mr. A. L. Jones. The report of the delegates to the Mid-North Conference was also received and discussed.

REDHILL, April 15th.—A paper was read from the *Journal of Agriculture*, which aroused a keen and interesting discussion.

LOWER-NORTH DISTRICT.

ADELAIDE TO FARRELL'S FLAT.)

ALMA.

March 3rd.—Present: 14 members.

COLT BREAKING.—Mr. W. Brown, who contributed a paper on this subject, said the colt should commence work when it was rising three years. If it was decided to make a practice of handling foals, the youngsters should be tied up the same way as colts. It was a mistake to pet and handle foals in the open yard, because that tended to create trickiness. The colt should be yarded securely. Before commencing operations, a light stick about 8ft. in length should be obtained. To the small end, a piece of rag or bran bag about the size of a large handkerchief should be attached. When the person handling the colt entered the yard the colt usually bolted around the yard. The stick and rag should be elevated to about 2ft. above and behind the colt until it stopped. The rag should be moved until it touched the wither. The colt would probably plunge forward, but under no consideration should the animal be allowed to get clear of the rag. When the animal had quietened down, the rag should be rubbed along the neck and wither. The breaker should approach the colt slowly and work his hand along the stick at an angle of 45 degrees from the shoulder to avoid being kicked or struck. At the same time the colt should be spoken to quietly and firmly. When the hand came in contact with the colt the animal should be quietly rubbed about the shoulder. If, on the other hand, the colt jumped away, it was important to stand perfectly still in order not to frighten the animal, but the stick should be retained, and kept in contact with the colt until it stopped. The process could be repeated until the animal could be patted without moving. Before placing a rope on the neck of the colt, a bran bag should be placed around the neck in order that the colt would not hurt itself should it pull back when tied up. After fastening the rope, a couple of turns around the post should be made. Should the colt throw itself down, it should be approached as before, and if it did not pull back it should be made to do so by moving the rag intermittently about the head until it stood, and allowed itself to be stroked about the head. Next, a strong pair of winkers with a jaw strap should be put on the colt, the rope being passed through the jaw strap.

so as not to hurt the mouth. The next step was to teach the colt to lead, by occasionally pulling and slackening the rope and moving from side to side. That method, combined with a little friendly coaxing would induce the colt to respond and commence to follow the "breaker" around the yard. If, however, it did not prove effective, a light rope or plough line should be obtained and passed through the jaw strap, with a loop large enough to pass down over the loins of the colt tied to form a breeching. The process of tightening both ropes at intervals should be repeated and invariably it would have the desired effect. When the colt had been taught to lead, a surcingle should be placed in position. Then two short reins should be attached to the surcingle, also to both sides of the bit, and back to the surcingle, making them fast half way between the wither and the belly. These should be tight enough to allow the colt to walk freely, and at the same time feel the bit evenly on both sides. All ropes should then be removed and the colt allowed to move around the yard. The harness should be left on for about three hours, after which the colt could be stripped and allowed to go out of the yard for a while. When yarded again, it could be easily caught with the rope, but no attempt should be made to place the winkers on the colt without first securing it to the post as described in the earlier part of the paper. The process of reining up should be repeated, and each time the reins should be made tighter, until they reached the pressure of the normal weight of the couplings of a harnessed team. Care should be taken not to make the mouth of the colt sore, or it would develop the habit of throwing up its head. When the animal was thoroughly tractable the writer suggested attaching a plough rein to both sides of the bit and teaching the colt to drive around the yard, occasionally reversing the course, and making the animal stop and start. When that had been accomplished, two quiet horses harnessed and with strong winkers should be placed in the yard. These should be coupled one on either side of the colt, reins placed on the outside horses, and the team driven out of the yard. After the animal has been exercised in that way for a while, a well fitting, firm collar should be put on it. It should then be attached to a light log or post with a fairly long pair of chains, so that the swing would not touch the heels. Care should also be taken to tie all hooks so that in the event of the colt kicking at the chains nothing would come undone. After a short exercise with the chains and log, the colt could be unharnessed and the shoulders thoroughly washed with salt and water to prevent scalding. That should be repeated each time until the shoulders had "set." After about two exercises with the log, the colt should be placed in the team next to the rein, giving it for a while a small advantage on the swing from the older horses. The colt should not be worked more than one yoke a day until it was over 3½ years old. The colt should never be hit about the head, nor the reins or couplings be jerked. The colt should not be kicked. The horse was a highly intelligent dumb animal, and would respond to kind treatment better than rough handling and cruelty, therefore, the whip should be used as little as possible. Each animal should do its share of the work, and when taken home from work it should be fed and watered. In the discussion that followed, Mr. W. Kuhlmann recommended the use of a whip in the case of a horse which was difficult to catch. Mr. Alec Smyth deprecated the practice of handling foals. To make a pet of a foal, was liable to result in the foal acquiring bad habits, such as biting, striking, or kicking. Mr. T. Freebairn considered that a good mouth was essential, and advised the use of an old cart saddle with short reins from the saddle to the bit, to teach a horse to respond readily to the rein. Mr. J. Schwerdt stated that a colt breaker should be skilled in the use of the lasso, and emphasised the need for quiet handling of young horses. Mr. O. J. Murphy recommended placing the young horse in the body of a wagon team, after it had been taught to lead, tie up, and respond to the rein. In the body of a wagon team the horse learned to pull. In that position the winkers could be removed without fear of the horse getting away, it would thus learn to stand quietly should the winkers be accidentally removed. Mr. L. Pillar stressed the importance of studying the temperament of the horse, because the method of breaking would depend largely on the temperament of the animal. The Hon. Secretary (Mr. O. J. Murphy) explained the advantages of the bowline knot and of splicing, and demonstrated the bowline knot, eye, and double splice.

ALMA.

March 31st.—Present: 16 members.

QUESTION BOX.—The meeting took the form of a "Question Box" evening. The first question to be discussed was, "Will burning stubbles clear the land of stinkwort?" Mr. A. N. Freebairn expressed the opinion that burning would not entirely eradicate stinkwort. Mr. L. Pillar had noticed that stubble land burnt off and subsequently fallowed carried less stinkwort than land on which hay had been cut. Cultivation of the fallow late in the spring, the use of sheep, and hoeing the weeds on fallow ground before the seeds had formed, were recommended as the best means to prevent the spread of stinkwort. "Which is the best month for shearing in the Alma district?" The latter part of September or early October was favored for the following reasons:—(1) In order to remove the wool before grass-seeds became troublesome; (2) to enable farmers to submit wool for auction at early sales; (3) to obtain the benefit of natural feed for fattening purposes whilst feed was still green; (4) the sheep fattened more readily after the shearing; and (5) to avoid the blowfly pest, which often became acute in the latter part of October. "Would the working Percheron be a suitable breed for this district?" The Hon. Secretary (Mr. O. Murphy) stated that as the Percheron horse possessed good weight and strength, was a good mover, and carried little hair on the legs, it should prove an excellent type for the clay soils of Alma, where the heavy horse carrying much hair on the legs soon tired under wet conditions. Messrs. Brown and Shepherd considered that caution should be exercised in regard to the breed, on the ground that the crossing of the present farm horse with the Percheron might result in the establishing of a type too light for general farm work. "Which is the better—deep or shallow ploughing for summer fallowing?" Mr. Alec. Smyth stated that summer ploughing should always be deep—5in. or 6in." With shallow ploughing the soil tended to set quickly with the advent of winter rains, and to produce a heavy growth of weeds, which necessitated re-ploughing. It had been his experience that summer fallow was never successful unless the land was ploughed deeply. Messrs. W. Brown and J. Freebairn supported those views. It was also stated that summer fallowing stubble land was not advisable; better results were to be obtained by leaving stubble land until August or September. "Would it be more profitable for farmers to pool their wheat in preference to selling to merchants?" Members were of opinion that the principle underlying the pooling system was sound. The importance of efficient management locally and in London was emphasised. Under efficient management the pooling system would be of greater benefit to the farmer than selling to merchants. "What is the solution of the thistle problem?" It was agreed that complete eradication was impossible whilst thistles were allowed to grow unchecked on roadsides and watercourses. Methods similar to those advocated for the destruction of stinkwort were recommended. "What is the advantage of adding salt to bluestone solution for pickling wheat?" Mr. W. Brown stated that since using well water containing 2oz. of salt to the gallon his crops had not been troubled by smut. He advised using 1lb. bluestone and 2lbs. salt to 10galls. water. Mr. J. Freebairn had had improved results since

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adding salt to the pickle, and recommended using a 1 per cent. solution of salt and water. Messrs. A. N. Freebairn and W. Kuhlmann also gave instances of good results obtained from the addition of salt to bluestone solution.

BLACK SPRINGS.

April 7th.—Present: 17 members.

FARM MANAGEMENT.—Mr. O. Mann, who read a paper dealing with this subject, said ploughing was one of the most important operations connected with farming. He preferred ploughing the red soil of that district when it crumbled as it was turned over, because it did not then set down so hard after a rain as it did when ploughed wet. Black soil could be ploughed at any time. A cultivator should be used in the spring, so that the land would be broken down after the winter rains. The harrows should always be ready for use after summer rains. Of varieties of wheat, Mr. Mann favored Federation and Major. Horses should receive every attention. A few good draught mares should be kept for breeding. After the harvest was completed, odd jobs should receive attention. All fences and gates should be put in good repair, and noxious and objectionable weeds destroyed. Not more than four good cows should be kept on the farm. A small flock of sheep would prove a valuable asset.

SHEARING IN A SMALL SHED.—Mr. C. Dunn, who read a short paper on this subject said shearing in the Lower North should commence, if possible, about the beginning of September, because as a rule sheep fattened quickly after they were shorn. Before commencing operations, the shed set aside for the purpose should be thoroughly cleaned out, particular care being taken to remove any pieces of string and straw. Each shearer should have a separate pen from which to catch the sheep, and a port-hole should be provided through which the shorn animals could be released. The wool table should be 9ft. long, 6ft. wide, and 3ft. high, and placed in a position so that the wool classer could walk around it. When the fleece was being rolled, about 12in. of the neck end should first be turned in, and then about 12in. of the breech. Next, the side of the fleece nearest to the person rolling should be turned in, the opposite side treated in the same way, and the whole fleece lightly rolled from the breech to the neck. The wool bin should be handy to the table to avoid wasting time. The wool should be divided into three classes, so that the highest price would be obtained.

NANTAWARRA (Average annual rainfall, 15.90in.)

March 5th.—Present: eight members.

POULTRY.—In the course of a paper dealing with this subject, Mr. L. Burgess said it was essential that every farm should have a flock of fowls, and it was unfortunate that the average farmer did not realise the amount of profit to be derived from the careful management of the birds. The speaker then dealt with the breeding and rearing of early pullets, fertile eggs, and control of sex. Continuing, he said heavy egg production could be obtained by feeding the birds on fresh, lean meat scraps and skim milk. Sprouted oats had also proved an excellent egg-producing food. It served as a green food all the year around, and the fowls were extremely fond of it. The food was prepared by soaking the oats in water for 12 hours, pouring off the water and putting the oats in a tin with holes punched in the bottom to allow the water to drain out. The oats were then watered twice a day, and in five or six days they would be ready for use. If a number of tins were used, a supply of oats would be ready for each day. The sprouts should be about $\frac{1}{2}$ in. long, because at that time the grain was in good condition, and the young, tender green sprouts made a delicate morsel for the fowls. To keep vermin under control, the following suggestion was made by the speaker:—"Take a hot pan or iron pot, place it in the fowl house, and put into it 1lb. of sulphur. Be careful not to inhale the fumes. Close the windows and doors for about two hours, then air the house, and give it and the roosts a good coat of whitewash. Change all nests." In the discussion that followed, Mr. R. Nicholls favored fowls as a sideline on a farm, but insisted on keeping them out of the stables although he preferred to allow them to roam over the other parts of the farmyard. Mr. G. Herbert thought fowls paid just as well as any other sideline, and involved far less trouble and work. Mr. C. Nicholls thought fowls paid well, but he would not allow them to run at

large in the farmyard, because they spoil and wasted a great deal of chaff. Mr. G. Durdin then delivered a short address in which he gave an account of a trip he had recently made to Western Australia.

ROSEDALE.

March 11th.—Present: nine members.

CONCRETE FLOORING.—The Hon. Secretary (Mr. F. H. Wolf), who read a short paper on this subject, said in wet weather a good clean floor about the house and outbuildings was most desirable, particularly where the soil was of a sticky nature. His method of putting down a lime ash or slaked lime floor was, after seeing that a good firm and level foundation was laid down, then to proceed to apply the mortar thoroughly mixed of one part lime ash and two parts of sand and gravel, which had been allowed to stand for a couple of days, and turned once or twice every day. When put down, it should be wet enough to be easily worked with the trowel. As soon as hard enough to bear the weight of a man, it should be thoroughly rammed down to prevent the floor cracking when perfectly dry and hard, to reach which stage would take about a week in fine weather. It could then be covered with a coat of tar or cement. Cement floors, Mr. Wolf considered to be much more preferable to lime, because they could be laid as soon as mixed, and would be ready to use the following day. No ramming was necessary, and that saved a lot of labor. For the first coat of cement he suggested using one part of cement and about seven parts of sand and gravel. That would set very quickly, and the top coat could be put on at once, using one part of cement and two parts of sand, the cement being thoroughly smoothed and pressed with a plastering trowel. When the floor was smooth, it should be dusted with pure cement, and rubbed until it had a glossy surface.

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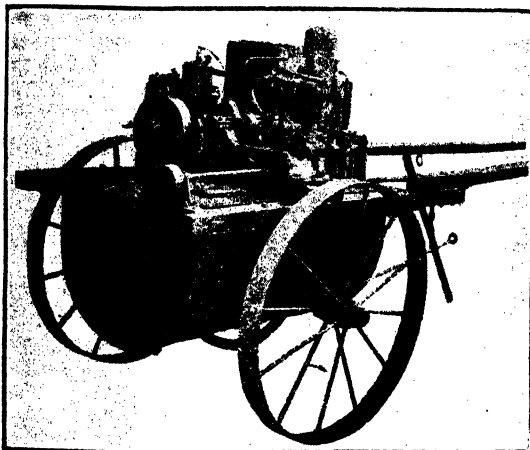
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TARLEE.

March 17th.—Present: 14 members and four visitors.

LESSONS LEARNED FROM THE YEAR 1924.—Mr. A. T. Will, in the course of a paper dealing with this subject, said he proposed to refer first to the question of cleaning seed. "Wheat was cleaned on the majority of farms with an ordinary winnower, which extracted most of the chaff and white heads. He believed it was advisable to do that work with a grader, which separated the wheat into three different grades. No. 1 graded wheat would yield approximately 3bush. to the acre more than ungraded seed, hence at the present price of wheat grading should be a payable proposition." In dealing with the question, treatment of seed for bunt, Mr. Hill said in the past he had pickled with bluestone. Farmers were aware of the effects of bluestone and the delay in the germination which frequently happened when bluestone was used, thereby making the use of that fungicide somewhat objectionable. During the 1924 seeding he sowed 19 acres of unpickled Queen Fan seed wheat. The wheat was two years old, free from smut, and was sown at the rate of 1½bush. per acre during very wintery weather. When harvested, it was free from smut, and yielded approximately 3bush. more per acre than the next best variety, Federation, which had been pickled. In the *Victorian Journal of Agriculture* he had noticed an article dealing with the question of pickling wheat. After a four-years' test it was stated that best results were obtained from powdered copper carbonate. That pickle showed the highest percentage of plants reaching maturity, and gave the highest yield per plot. The wheat used in the test was Federation, which was heavily infested with bunt spores, and it was sown untreated, and treated with copper sulphate, copper carbonate, formalin, and copper sulphate dust. Referring to wheat crop competitions, Mr. Hill said these were one of the best schemes that had come before farmers. The competitions caused a rivalry that was one of the best incentives for advancement. The person who won a prize would try and keep that honor the following year. The loser would endeavor to produce a crop that would excel the one of the previous year. Highest points were awarded for the apparent yield in grain, therefore they should grow varieties which were suitable for the district and those which were considered the heaviest yielders. He recommended Federation, Queen Fan, Major, Yandilla King, Ford, and Late Gluyas. The value of the agricultural show he would place on the same footing as a crop competition. The agricultural show was a means of improving the livestock products of the farm, and whilst the preparation of an exhibit might involve a little trouble, the benefits that were to be derived from exhibiting should more than repay any inconvenience. The same principle applied to the crop competition as to the agricultural show—the person who competed was the one who would gain the greatest benefit. In the discussion that followed, Mr. E. T. Clarke referred to the necessity for early and well worked fallow. He emphasised the need of plenty of sheep on the farm in order to keep down weeds and improve the fertility of the soil. Mr. L. Molineaux was convinced of the value of heavy dressings of super. He said that up to 130lbs. of high-grade super to the acre was profitable. Mr. Kelly advised dry pickling with copper carbonate. Mr. W. G. Branson referred to the shortage of cornsacks last harvest, and said the farmers were largely responsible themselves for not placing their orders for at least half their estimated requirements early in the season. He also said farmers should give more consideration to the marketing of their produce. He referred to hundreds of tons of hay that had been stacked and held over lean years. Farmers had refused £5 per ton for the hay, and to-day the stacks were practically valueless. Mr. A. M. Fuller was of the opinion that in past years local farmers had given too much time to the growing of purely hay wheats, and advised a little more attention to varieties more suitable for grain.

WINDSOR.

February 26th.—Present: seven members and visitors.

PROTECTION OF NATIVE BIRDS.—Mr. H. Prime, in the course of a paper under the above heading, said it was necessary to destroy certain birds when they increased to such an extent as to become seriously destructive to crops. Certain birds, such as swallows, wagtails, magpies, robins, larks, and other small insecti-

vorous birds, were not injurious in any way to farmers and gardeners. On the other hand, such birds as sparrows, starlings, pigeons, &c., were responsible for a good deal of damage at certain periods of the year. Even those birds that were so destructive to corn crops and fruit in their respective seasons, played an important part in assisting to keep under control the many insect pests which damaged the crops of the farmer. When fruit and grain were not to be had, the starling killed many insects, worms, grubs, &c. Honey eating birds assisted in the fertilisation of plants and trees. Some of those birds were a nuisance when fruit was ripe, but if the gardener took into consideration the amount of work such birds did in the garden at other times, particularly in destroying codlin moths and other garden pests, he would find that their usefulness outweighed their destructiveness. Scavenger birds, and particularly the crow, were, as a rule, regarded as enemies of man. The crow at times did some harm, but it also assisted the farmer in cleaning up carcasses, and eating blowfly larvae. Night flying birds were most useful, in that they assisted in keeping under control such pests as mice, rats, grubs, beetles, &c. Before destroying any of the native birds, farmers and gardeners should weigh their usefulness against their disadvantages.

KAPUNDA, April 9th.—The first meeting of the Kapunda Branch of the Agricultural Bureau was held in the Institute on Thursday, April 9th. Officers were elected, and it was decided that meetings should be held on Friday evenings on or before full moon.

LYNDOCH, March 12th.—The report of the delegates who attended the Conference of Lower North Branches of the Agricultural Bureau, recently held at Clare, was received and discussed. Mr. R. F. Kies tabled two bombs which, when fired from a gun, had proved very effective in scaring starlings in vineyards.

OWEN, April 3rd.—The meeting took the form of a "Question Box" evening, when several subjects of local interest were brought forward. In discussing the question, "What is the best method and time to grow pease in this district," members were of the opinion that the crop should be sown in autumn, and the chance of winter frosts taken, rather than sown late and run the risk of having the yield spoiled by hot winds.

SADDLEWORTH (WOMEN'S), March 17th.—Fifteen members and three visitors attended the March meeting, which was held at the residence of Mrs. F. Coleman. Miss D. Coleman gave a report of the Clare Conference, and a paper, "Fruit Preserving," was read by Miss Rex.

WILLIAMSTOWN WOMEN'S, March 4th.—The Assistant Dairy Expert (Mr. H. J. Apps) delivered an address, "Butter Making and Bacon Curing."

WILLIAMSTOWN WOMEN'S, April 1st.—A paper, "First Aid in the Home," was contributed by Mesdames Gundy and Hamilton. The paper contained remedies that could be prepared in the home for checking coughs and colds, and the treatment of the patient when confined to bed.

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KILKERRAN.

April 7th.—Present: seven members.

BENEFITS OF THE AGRICULTURAL BUREAU.—A short paper on this subject was read by Mr. S. Keightley, in the course of which it was stated that since the Agricultural Bureau had been in existence there could be no doubt of the benefits that the man on the land had derived from the organisation. Through the medium of the Agricultural Bureau it was possible for the farmer to work his holding on scientific principles. The Experimental Farms and Agricultural College were carried on under expert supervision, and if the results of those institutions were followed, a considerable saving of time, labor, and money could be effected. Farmers should also experiment on their holdings, so that they could ascertain the best methods of working land, and what crops could be grown to the best advantage. Every member was entitled to a copy of the *Journal of Agriculture*, which contained information relating to all phases of agriculture. He advised every farmer to join the Agricultural Bureau. In the discussions that took place at the meetings, valuable information was obtained from the experiences of members. If a member was able to speak with authority on the matter under discussion, it was his duty to express an opinion, so that other members would gain the benefit of his experience. Government experts were available to give advice on any subject connected with agriculture, and reports of work conducted under departmental supervision were published from time to time in the *Journal of Agriculture*.

PASKEVILLE (Average annual rainfall, 16.10in.).

March 10th.—Present: nine members.

THE WORK OF THE FARM HORSE.—In the course of a paper, "The Horse on the Farm and Its Capacity of Work and Management," Mr. T. Price said that in order to illustrate his remarks he had decided to take as an example a team of horses and 400 acres of land. Of that area, 300 acres should be fallowed and 100 acres sown with barley and oats. One man and a 12-horse team should be able to do the work, three spare horses being held in reserve. One hundred acres should be worked up after harvest, and a 21-tyne cultivator and 12 horses should be used. As soon as the first rains fell, the 15 horses should be divided into two teams to be used in harrowing the fallow. The cultivator worked with 12 horses should be run over the fallow to prepare it for seeding. To put in the crop, a 20-hoe combine and 12 horses should be used, the three spare horses being used for carting wheat, super, &c. When seeding was finished, 12 horses should be put in the cultivator to work the 100 acres which were broken up before seeding. The 12-horse team should be used for fallowing, and the three spare horses could be used for odd jobs. When fallowing was completed, as many harrows as possible should be put on after each fall of rain. The harrows and cultivator should be used as much as possible until harvest time. With 15 horses available, two harvesters or one harvester and one thresher could be used. Each year three of the mares should be stunted, and with reasonable good fortune two foals should be reared. That would mean that two two-year-old colts would have to be broken in every year, and it would allow the farmer to dispose of two of the older horses, and maintain a young team. As stated above, the 50 acres should be sown with oats, and that, with the roadways through the wheat and around the fences, should supply enough hay to carry the horses through the 12 months. To avoid waste, the hay should be chaffed before being fed to the horses. The stack should be mouse-proofed, and a good coat of straw put on, and if that were properly done and the straw well tied down not a single sheaf should be wasted.

WEAVERS.

March 16th.—Present: 12 members.

PREPARATIONS FOR SEEDING.—Mr. A. Page, who read, a short paper, said in preparing for seeding it was first necessary to see that the horses were in good condition. Secondly, all harness should be in good working order, and the drill and other implements ready for use. If grass land or stubble was to be used

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for growing either barley or oats, it was necessary to work the land down to a fine tilth. If the stubble land was loose, he preferred to use the cultivator and not the plough. Every time the grass or stubble land was worked, even though conditions were dry, the extra cultivation would mean increased yields at harvest. In the discussion that followed, Mr. F. Anderson asked whether it paid to burn off stubble. Members were in favor of ploughing in the stubble if the land was to be fallowed, but if a second crop was to be sown then the stubble should be burnt.

WESTERN DISTRICT.

CHARRA.

March 11th.—Present: 16 members.

PIG RAISING AS A PROFITABLE SIDELINE.—Mr. A. J. Handtke, in the course of a short paper dealing with this subject, was of the opinion that the Tamworth sow crossed with a Berkshire boar would be the best breed of pig for that district. The breed was one which matured quickly, and the animals were of a sound constitution. He favored keeping about four sows, which should farrow at regular intervals, so that when one lot was marketed the next would be ready for topping up. A very successful plan was to have three small paddocks; two sown with barley and one with rape. In reply to a question as to what corn was best for topping up, Mr. Handtke favored barley. The speaker said the pigs should be marketed when they weighed about 100lbs. to 120lbs. The election of officers for the ensuing year then took place.

ELBOW HILL (Average annual rainfall, 11in. to 12in.).

March 17th.—Present: 11 members.

Members discussed points of interest relating to the past harvest. Mr. S. F. Wake reported the following wheat yields:—Currawa, sown early in May at the rate of 50lbs. of seed and 75lbs. super, gave a return of 13bush. to the acre. Florence, treated under the same conditions, yielded about 6bush. to the acre; Gluyas, 12bush. Currawa, sown late, yielded 15bush., and Major, 10 bush. per acre. Several other members spoke and gave an outline of the year's return, but owing to the winter being very dry and October rains being too late, no heavy crops were reaped, the best going about 5 bags per acre.

ELBOW HILL.

April 7th.—Present: 10 members.

SHEARING A SMALL FLOCK OF SHEEP.—Mr. T. Wildman, who read a short paper dealing with this subject, said on most small farms sheep were shorn in the barn or implement-shed. All rubbish should be removed from the shed. A shearing-board to accommodate two shearers should be not less than 6ft. 6in. wide and 12ft. long, and if made in two sections, it could be handled without any difficulty. There should be enough grating to hold no less than 50 sheep. As many sheep as possible should be kept under cover, so that, in the event of wet weather, shearing would not be delayed. The grating should be made of lin. x 1½in. stringybark, with 18in. jarrah centres. The battens should not be more than ½in. apart. The grating should be made in sections 7ft. long by 3ft. wide. If possible, preparation should be made in the shed for catching and releasing pens. A floor that was not clean enough on which to store the wool could be covered with a carpet of bags; if pegged down it would make a good floor covering. The wool table should be 8ft. x 4ft., so that all of the fleece could be placed on the table. A piece-picking table about 3ft. x 2ft. would also prove useful. The skirtings of the fleece and pieces from the board should be placed on the piece table. The pieces should be made into two classes. For a small flock, two classes of wool should be sufficient, all long wool being classed as AA, and short, broken, or weak-stapled wool as A. A box-press should be used for baling, and stencil-plates for branding the bales. Mr. Cooper considered that a board 8ft. wide and 16ft. long would be suitable for two shearers. The grating should be made of battens lin. x lin. and spaced ½in. apart. Mr. A. Wildman said that the measurements given

for the floor and grating were too small, and that the catching-pen should be 3in. higher than the shearing-board. He favored a bin for holding wool previous to baling.

MILTALIE (Average annual rainfall, 14.55in.).

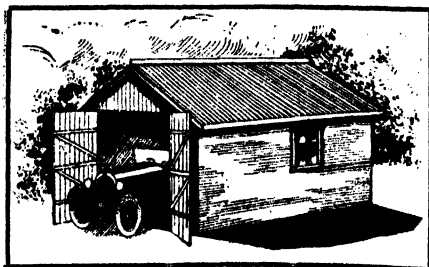
March 7th.—Present: eight members and three visitors.

In the course of a short paper under the heading "The Motor Car Not a Luxury" Mr. A. Beinke said the motor car now played an important part in the welfare of the people in the country, especially those who resided in the "back blocks." In cases of sickness, or breakages of implements, the farmer was able to save valuable time with the aid of a car. Like all other machines and engines, the motor required proper care and attention if it was to be reliable and serviceable. In the discussion that followed, Mr. W. G. Smith said the motor car was a great help to the settlers on Eyre Peninsula. Mr. T. J. McEachern considered a motor car a necessity to the progress of the outback holdings. Other members, including Messrs. D. Bagnell and J. Jacobs, spoke of the value of the motor in rural districts.

PYGERY.

March 7th.

SEED WHEAT.—Mr. Geo. Day, who read a paper dealing with this subject, said the farmer should select good, sound seed from the best and cleanest crop of wheat of the preceding harvest. All seed wheat should be graded or re-cleaned, the work being done directly after harvest. At the same time the seed should be treated for bunt. That would facilitate seeding, and the wheat could be quickly dried in summer time. For pickling, he preferred formalin in the proportion of 1lb. of formalin in 40galls. of water. All bags, &c., used for holding the grain should also be pickled. If the seed box of the drill had held untreated seed it should be rinsed with the pickle solution before it was refilled. All treated grain should be stored some distance away from other grain, and smut-infested wheat should be kept apart from super. The majority of farmers favored varieties of wheat that occasionally gave heavy yields of grain, and failed to realise the value of other characteristics, such as habit of growth, disease resistance, quality of grain, and gluten contents, which must be present in other varieties. If more first-quality grain were grown it would help to enhance greatly the price of Australian wheat. If the wheat had become mixed, or of an inferior standard, he suggested procuring one bag of each variety required, and planting it on new ground, grass land, or clean fallow, free from other cereals. Whilst the wheat was growing, barley, foreign wheats, oats, weeds, or diseased plants should be removed, and when thoroughly ripe, each variety should be harvested separately, cleaning the machine thoroughly after each kind was reaped. He found that in a good season, hand selected strains from Roseworthy College yielded at least one bag per acre more than non-pedigreed wheats. In choosing suitable varieties



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for a district, the nature of the soil and the rainfall should be considered. The points to look for in a suitable wheat for their district should include strength of straw, retention of grain, weight, appearance, size and shape of kernel, together with such characteristics as drought, rust, smut, and other disease-resisting qualities.

YADNARIE (Average annual rainfall, 14.09in.).

March 16th.—Present: 17 members.

CULLING SHEEP.—Mr. W. L. Brown read a paper, in the course of which he said the main object of culling was to reject faulty sheep and those that did not reach the desired standard. The flock should be classed when the sheep were carrying 12 months' growth of wool, because defects in the fleece were then most noticeable. Sheep showing the following defects should be taken from the flock:—Animals with wrinkles all over the body, sheep which produced a short-stapled wool, those which carried a fleece lacking density, or growing a dull yellow-colored wool. All sheep whose wool was very coarse at the breech, any sheep whose wool was less than 1½in. long at 12 months' growth, or sheep showing kemp through the wool. After the sheep had been shorn, they should be examined carefully to detect if the feet were sound, and at the same time those animals which showed any of the following body defects, such as undersize, weak constitution, hollow-back, and undershot or overshot jaws should be culled. Those with "kempy" faces or devil's grip, excessive cow hock, slab-sided, long thin necks, and all deformed animals should be removed from the flock. The number of culls to be removed would depend on the set standard of the flock. The farmer should aim for perfection and type, avoiding wool that was rough and harsh. He did not think it advisable to specialise in breeding either for frame or wool, but thought one should try and strike the happy medium. Frame and constitution should be uppermost in the mind of the classer, for without those two essentials, the flock owner would not succeed. Wool buyers stated that a clean fleece added from 2d. to 3d. per lb. to the value of the wool. The charge for dipping was about 2d. per sheep. Vermin-infested sheep were a menace to neighbouring flocks. Dipping also helped to keep the flock healthy. The world required wool, but it also wanted lamb and mutton. Further, the class of wool bringing 40d. per lb and more could not be produced by the farmer who had to combine sheep with other branches of agriculture. The mixed farmer had many factors to consider in selecting a breed or type of sheep. His sheep had important functions to fulfil other than that of producing a yearly clip, the most important of which was scavenging.

PETINA, February 28th.—Mr. J. O'Connor, M.P. (Member for the District) delivered an address in the course of which he referred to the value of the Agricultural Bureau. Sixteen members and nine visitors attended the meeting.

POOCHERA, April 1st.—A paper, "Power Farming," was read, and a keen discussion followed. Other matters of local interest were also brought forward for consideration.

ROBERTS AND VERRAN, March 5th.—The meeting took the form of a "Question Box" evening, when several questions relating to diseases and ailments of stock were discussed.

EASTERN DISTRICT.

KRINGIN.

November 8th.—Present: seven members.

PLANTING TREES.—Mr. F. W. Morrow, who read a paper dealing with this subject, said natural timber that could be utilised for fencing, &c., was very scarce in the Kringin district, and whilst a few clumps of scrub pines or mallee trees which might be termed useful timber could be found on the majority of farms, those would be exhausted in a few years. He thought it would be a good plan to plant some useful varieties of trees, for preference, Red gums. The Red gums grew easily and rapidly, and, once established, did not require very much attention.

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The trees provided shade and shelter for stock, and beautified the homestead. The large sandhills were too steep for cropping, and they would not grow grass unless worked up and crepped, but if they were planted with trees, rabbits and other pests would not find a harbor in the sand. A good plantation of trees would be a valuable asset if the farmer wished to sell, for they would add to the appearance of the property, and enhance the value of the land.

LAMEROO (Average annual rainfall, 16.55).

March 7th.—Present: 16 members.

HARVEST REPORTS.—Mr. C. E. Koch, winner of the Chaudes Wheat Crop Competition, had a farm average of 30bush. to the acre, and wheat returns were as follows:—Ford, 33½bush. to the acre; Currawa, 20bush.; Yandilla King, 30bush. Scotch Grey oats sown at the rate of a ½bush. of seed and 60lbs. super cut 1½ tons of hay per acre. Mr. A. J. A. Koch's wheat was sown on summer fallow, and the following yields were obtained:—Major, 35½bush; Ford, 31½bush; Wonnau (a new wheat from Victoria), 21bush.; Minister, 20bush.; Yandilla King, 23½bush.; and Gluyas, 24bush. One paddock of Algerian oats, sown at the rate of 67lbs. seed and 114lbs. super, averaged 28bush. Scotch Grey oats, sown at the rate of 50lbs. seed and 100lbs. of super, averaged 30bush. Malting barley yielded 33bush. per acre. Oats and barley were grown on fallow. Mr. W. J. Morecom reported:—Indian Bluey, 32bush.; Currawa, 27bush.; and Early Gluyas, 24bush. Oats sown on grass land yielded about 18bush. Oats on fallow returned up to 35bush. per acre. Mr. C. R. Eime reported that fallowed wheaten stubble land gave 5bush. more per acre than fallowed grass land. Early Gluyas, Ford, and Currawa were his best wheats. Mr. F. R. Koch reported having a farm average of 27bush. per acre, Gluyas yielding 27bush.; Currawa, 30½bush.; Federation, 25bush.; and Yandilla King, 27bush. Mr. C. Cornish said Currawa gave the best wheat yield on his farm, returning 30bush. to the acre, with Onas and Joffre next, each yielding 24bush. The farm average was 18½bush. Mr. G. H. Twelftree reported having grown Major, Currawa, J7, Daphne, and Federation wheats, with a farm average of 25bush. Algerian oats sown on fallow, at the rate of 1½bush. of seed and 45 per cent. super, cut 2½ tons of hay per acre. Mr. E. F. Davidson grew the following varieties of wheat:—Early Gluyas, Minister, Currawa, and Ford, with an average yield of 23bush. Mr. A. G. Burns reported having grown the following wheats:—Ford, 21½bush.; J7, 21½bush.; Currawa, 21bush.; Early Gluyas and Daphne, 20bush. Farm average, 21bush. Mr. C. Needs reported Early Gluyas yielding 26bush. and Currawa 23bush., with a farm average of 25bush. Mr. A. V. Ivett had a farm average of 26bush. Mr. C. H. E. Hentschke said Ford gave the best wheat return, 28bush. per acre. Currawa and Caliph averaged 26bush. Grass land "worked up" averaged 16bush. Mr. J. Kakoschke reported a farm average of 23bush.

MARAMA.

April 1st.—Present: eight members.

RABBIT DESTRUCTION.—Mr. E. C. Tilly, in the course of a short address on this subject, remarked that unless active measures were taken, the rabbit would become a serious pest in their district. He was of the opinion that one of the best methods to adopt was to clear the country of scrub. Regarding the use of the poison cart, he said poison should be distributed annually, because that killed rabbits that did not use burrows. He thought the fumigator was the most effective method of dealing with burrows. That should also be done periodically. Trapping was effective if carried out properly, but for best results a man should be able to go round the traps each day. A general discussion ensued.

PARILLA (Average annual rainfall, 16in. to 17in.).

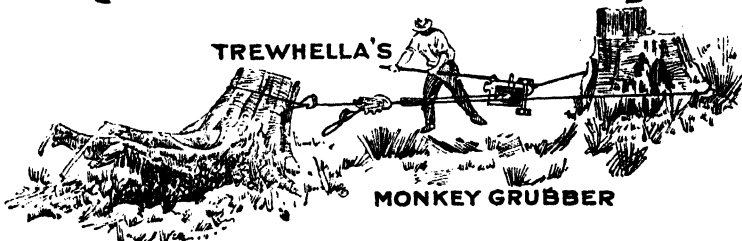
November 7th.—Present: eight members.

SHEEP ON THE FARM.—Mr. G. Gregory, in the course of a paper dealing with this subject, said sheep were one of the best sidelines to work in conjunction with wheat growing. In addition to providing the household with a supply of fresh meat, sheep rendered valuable assistance in keeping weeds under control. They

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also added to the revenue of the farm in the form of wool and lambs, and the soil was enriched by the droppings of the animals. In concluding, Mr. Gregory stated that sheep were the best mortgage lifters, even if the present value of wool dropped 50 per cent.

SUMMER FALLOWING.—At a further meeting held on February 13th, a paper on this subject, prepared by Mr. A. Michael, of Woomelang, Victoria, was read by Mr. C. Neindorf. In the course of the paper it was stated that the writer found that summer fallow yielded from 4bush. to 8bush. per acre more than winter fallow, providing the crop was sown on heavy land. The land should be fallowed with the plough and worked to a depth of 3in., the work being done as soon as possible after harvest. The object of summer fallowing was to loosen the surface of the soil so that it received the whole of the winter rains and at the same time cover all weed seeds. As soon as the first soaking rain fell, and the grass was well above the ground, the cultivator should be worked to the depth to which the land had been ploughed. Subsequent cultivations should be given after each rain, each stroke of the cultivator being a trifle shallower until the land was being worked to a depth of 2in. The surface soil should consist of a loose mulch to a depth of 2in., but work should cease immediately the land was dry 1in. from the surface. The consolidation of the subsoil at the end of the winter was a most necessary part of the operation. Eighty to 90lbs. of super. with 48lbs. of graded seed per acre was sown at an average depth of 1½in. to 2in. The paper mentioned that harrows were seldom used, because they made the soil too fine and smooth, thereby rendering it liable to drift. The surface should not be worked to a powder, but left somewhat rough with small "pebbles" of earth on top to prevent drift. The Hon. Secretary (Mr. C. S. Foale) reported that last season he had summer fallowed his land, and had reaped 35bush. to the acre.

RABBITS AND WINDBREAKS.—At a meeting held on March 3rd a short paper dealing with this subject was read by Mr. M. Rush. The speaker said no matter how frequently the land and windbreaks adjoining the farm were cleared of rabbits, the pest became as bad as ever if not disturbed for a few weeks. Without windbreaks the country would be very miserable, but it was not fair to expect landholders to keep them free of vermin if the councils did no more than serve notices to kill rabbits. Wire netting could be obtained through the councils on easy terms, but landholders should not be compelled to go to that expense. If every landholder killed the rabbits on his land and the windbreaks adjoining his property, there would be no need to net. In any case, the netting would hold the drift, and in a few years it would neither stop rabbits nor livestock. He urged farmers to observe the notices of the councils, and reduce the rabbits, particularly during the autumn, and it would then be less trouble to trap the stragglers after seeding.

PARILLA (Average annual rainfall, 16in. to 17in.).

April 3rd.—Present: four members and two visitors.

FERTILIZERS.—In the course of a paper dealing with this subject the Hon. Secretary (Mr. C. S. Foale) said plant growth took certain elements from the soil, which could be replaced by artificial fertilizers. Most South Australian soils were deficient in phosphoric acid. That deficiency was made good by the application of superphosphate. Superphosphate contained the necessary plant food for cereal crops in a rapid and easily available form—a most necessary quality in a fertilizer used in a low rainfall district. Bonedust, which was not a water soluble fertilizer, was not suitable in that district, because it was too slow in its action and the cost was prohibitive. Super promoted a quick growth of the root system of young plants, thus firmly establishing them in the soil, and enabling them to resist drought. There was no limit to the quantity to use. However much might be applied, the plants used only the amount required for their proper growth, the balance remaining in the soil until required by the next crop. The manure would not wash out of the land. That was a most important fact, and one which had had such a revolutionizing effect on pasture lands, where top dressing had been adopted.

PINNAROO (Average annual rainfall, 16.74in.).

March 13th.—Present: nine members.

QUESTION BOX.—The meeting took the form of a "Question Box Evening." Mr. P. H. Jones, in dealing with the question "Should fallows be harrowed or cultivated after summer rains, whether they are free of weeds or not?" said he would not cultivate fallow when harrows could be used to do the job. The harrows were able to cover the land more quickly than the cultivator, and the work was lighter for the horses. The question "Has the combine proved efficient for seeding operations, or is it advisable to cultivate in front?" was replied to by Mr. H. Ledger, who said that if the fallow was in good order he did not favor a cultivator worked in front of the combine. Mr. H. G. Fewings replied to the question "What is the reason for such a small amount of take-all in the crops last year?" He considered that the land had been passing through the "take-all period." The adoption of better farming methods and the use of super, was, however, helping to overcome the disease. He further stated that, in fallowing, the land should be well turned, then harrowed, cultivated, and worked according to the season. Sheep should also be kept on the land. The question as to whether increased yields during the last two years were due to increased super dressings or the result of cultivation was dealt with by Mr. P. J. Edwards, who was of the opinion that the increased yields were due to better tillage and not to super. Mr. H. Ledger agreed. He thought that fallows should not be overworked. Applications of super could also be overdone, although if large quantities were applied to a crop it would increase feed the following year. Mr. F. S. Jones replied to the question "Should sheep be shorn early or late in the season?" He thought that shearing should be finished early in September. That enabled the farmer to run sheep on the fallow without fear of getting dirt in the wool. It also assisted the sheep to avoid blowflies, and afforded an opportunity of getting the wool in at an early sale. Mr. P. J. Edwards said September was a cold, windy, and wet month, and he believed that deaths

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would occur owing to rough weather. Mr. H. Fewings favored a later shearing. Shearing should be done before the grass seeds fell and before the commencement of cold weather. He admitted that that might cause delay in getting shearers. Mr. H. Ledger thought the time of shearing depended on whether sheep were to be sold or kept. If the latter plan was adopted he favored early shearing with blades, but if they were to be sold, he favored a later shearing with machines.

RAMCO.

March 9th.—Present: six members.

AGRICULTURAL AND HORTICULTURAL SHOWS.—Mr. C. Boehm read a short paper dealing with this subject, in the course of which he stated every producer should support district shows by competing. The person who exhibited was able to compare his with other exhibits, and that was educational. One often heard it remarked that the prizes were not worth the trouble. He admitted that attractive prizes were an incentive to enter exhibits, and the special prizes that were offered was money well spent, but the main object of the exhibitor should be to gain the award or honors. Those who failed to gain an award with the first attempt should not be discouraged, but make greater efforts to produce a better article. Every grower should endeavor to produce an article that would compare with the products of other countries, and an agricultural or horticultural show offered opportunities to compare, study, learn, and improve, and the person who did that was a credit to the State.

RETRELLISING.—Mr. J. Boehm, in the course of a short paper dealing with this subject, said during the last winter he had had the experience of renewing old currants. When the work was commenced, he intended to pull out the old wires, which were three to the row, but when all the arms were released it was impossible to shift the wires. To clean the wires of all the old string and rubbish would have entailed a considerable amount of work, and he decided to release the wires by splitting the old posts. That did not improve matters to any extent, because the wires could not be put back into the posts without being cleaned. To overcome the difficulty, he decided to put the wires on one side of the posts. Holes were bored in each post at the required height, and the wires strained and tied to the posts with short pieces of wire. If at any time a post broke or rotted, and had to be replaced, it was a very simple matter to untie the wire, put in a new post, and tie the wire up again. He had also put the wires in a new trellis on the side of the posts, and it had proved satisfactory in every way. An interesting discussion followed, and it was generally agreed that Mr. Boehm's suggestions should prove very useful.

YOUNGHUSBAND.

March 13th.

COST OF PRODUCING ONE BUSHEL OF WHEAT.—In the course of a discussion on this subject, Mr. D. Brinkley said that at the present time he could not grow wheat for less than 4s. per bushel. Mr. H. Gowling considered wheat could be grown for a little over 3s. per bushel, the cost being worked out as follows:—Ten acres of crop—Ploughing, 2½ days at 14s. per day, £1 15s.; drilling, 14s.; harrowing, 7s.; reaping, £1 1s.; winnowing, £1; carting, 10s.; bags, twine, oils, grease, and pickling, £2; horsefeed, £3; seed and super, £1; total, £14 7s. Mr. Gowling considered a 9-bush. crop was about the average for that district, and that worked out at about 3s. 2d. per bushel.

BARMERA, March 10th.—Professor Arthur J. Perkins (Director of Agriculture) delivered an address, "Soils and Fertilisers." Mr. C. G. Savage (Deputy Horticultural Instructor and Manager of the Berri Orchard) was also present, and spoke on the subject, "Cold Dipping Sultanas."

COOMANDOOK, January 7th.—Mr. W. Trestrail read a paper, "The Story of Wheat," in which he traced the history of wheat, the means by which it had been improved, and the importance of the crop to humanity.

LONE GUM AND MONASH, January 30th.—Forty-one members and visitors attended the meeting, when Mr. J. Johnson, of the Renmark Branch, delivered an instructive address, "Fruit Drying."

On March 8th a party of 46 members and visitors paid a visit to Renmark, when the properties of Messrs. Johnson and Showell were inspected.

MONARTO SOUTH, April 11th.—The subjects "Clover Growing" and "Top Dressing Pasture Lands" was introduced, and a keen and instructive discussion followed.

MOOROOK, April 2nd.—The Horticultural Instructor (Mr. G. Quinn) attended the meeting and discussed questions of interest with local horticulturists. Fifteen members were present.

MYPOLOGA, April 6th.—Twenty members attended the April meeting, when Mr. C. H. Beaumont (Orchard Instructor and Inspector) delivered an address, in which he gave an account of his experiences during a recent trip to California.

MYPOLOGA, March 9th.—Mr. A. R. Hilton, of the Murray Bridge Branch, delivered an address, "Grasses and Fodders." Mr. Hilton exhibited a collection of 40 different varieties of grasses.

MYRLA, March 7th.—The monthly meeting of the Branch was held at Mr. J. W. Schumacher's residence, when a paper, "Power Farming," was read by Mr. W. Nairn.

WINKIE, March 24th.—The meeting took the form of a "Question Box Evening," when several subjects of local interest were discussed.

SOUTH AND HILLS DISTRICT.

CHERRY GARDENS (Average annual rainfall, 35.03in.).

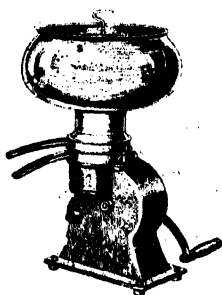
April 7th.—Present: eight members and 20 visitors.

The monthly meeting of the Branch was held at the residence of Mr. C. Ricks. The visitors, including a number of members from the Ironbank Branch, inspected the orchard and vegetable garden. Afternoon tea was provided by Mrs. Ricks.

FINNISS.

March 6th.—Present: eight members and six visitors.

CO-OPERATION.—Mr. J. J. Bradford, in the course of a paper dealing with this subject, said primary producers were urgently in need of organisation at present. The only means towards that end he believed to be the Agricultural Bureau, which had done so much to advance the interests of agriculturists. Notwithstanding the good work that the Bureau had done, he believed it could do much more if it had the whole-hearted support of the men on the land. If the producers were



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to co-operate more extensively with the Department of Agriculture the country would benefit very considerably. To obtain the most knowledge from the Department he suggested readjustment among the Branches. It was noticed, he said, that as soon as the novelty of a newly formed Branch wore off some members lost interest in the work. That he believed to be largely attributable to frequent discussion that took place on matters that were more or less of a trivial nature. Again there was not sufficient co-operation amongst the various Branches. If Branches worked more in conjunction with one another, fresh and more interesting discussion would be brought forward. He suggested that Branches should exchange papers one with the other, and it was his opinion that more practical knowledge was to be gained from homestead meetings and daylight demonstrations than the usual evening meetings. Present-day farmers could take a certain amount of relaxation from work on Saturday afternoons, and if a Bureau meeting was held at such time, and invitations extended to members of neighboring Branches and officers of the Department of Agriculture, a broader discussion and wider exchange of methods of farming would result. Such a scheme would, he believed, also prove a strong incentive to farmers to keep abreast of the times in regard to the most modern methods of agriculture and stock raising. In support of that argument, Mr. Bradford cited the success of the wool instruction classes that had been held in various country centres. The Agricultural Societies were doing a good work, but the value of those organisations would be very materially increased if farmers would join the societies and render to them their financial assistance and the advantage of their practical knowledge. That would place the societies in a strong position, and they would be able to form numerous show classes, and appoint competent judges, who would be prepared to give the reasons for their decisions, and so make the show an educational feature. In order to make District Conferences of the Bureau more instructive, Mr. Bradford suggested that when it was decided in what town the next Conference should be held, the delegates attending the Conference should decide upon two important subjects which would be brought forward at the next gathering. Each Branch interested in the Conference should be invited to write papers on the chosen subjects, and these should be forwarded to the Department, which would decide on the papers that would be read at the Conference. The Branches would then discuss those subjects at the ordinary meetings, and each Branch should appoint a delegate with a good knowledge of the subject to attend the Conference. The experts of the Department would be in attendance, and would naturally come prepared to impart scientific information to the Conference. If such a plan were adopted the whole question would be discussed in the form of a debate, and delegates would return to their Branches and be able to impart the lessons that had been taught to the meeting. At the ordinary meetings of Branches Mr. Bradford thought that many valuable papers which were contributed were more or less wasted, because the discussion was restricted to a limited time. It was often beneficial and advisable to devote several evenings to the discussion of some of the more important agricultural subjects. He believed that the value of the Agricultural Bureau would be considerably increased if members gave it and the Department of Agriculture their whole-hearted support, and endeavored to introduce some of the new features which he had suggested in the paper.

PORT ELLIOT, March 28th.—Twelve members attended the March meeting. Several subjects of local interest were brought before the meeting for discussion.

RAPID BAY.

March 14th.—Present: seven members.

TOP DRESSING.—Mr. H. Roper, who read a paper dealing with this subject, said top dressing was proving a paying proposition on ironstone country and low-grade soils and where there was an average rainfall of about 20in. Country that was valued at 10s. per acre before it was top dressed was now worth from £5 to £10 per acre. When top dressing had been carried on for some years, and the value of it had been proved, thousands of acres of land that at present were considered useless would be carrying from two sheep upwards per acre. Top dressing renewed the natural grasses and the land could be well stocked,

because the phosphates encouraged the growth of plants that otherwise would not make an appearance in the pasture. With the aid of top dressing, the farmer was able to put fat stock on the market. Another advantage was that stock could be purchased when in low condition and fattened in a short time. That could not be done on country that was not manured. The farmer would benefit by top dressing, because it increased the value of the land threefold. An interesting and profitable discussion followed.

ROCKWOOD.

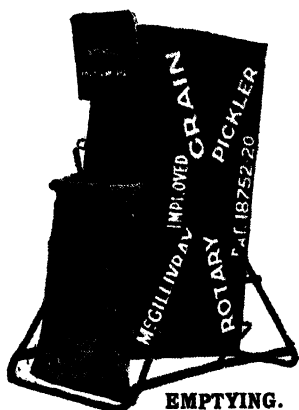
March 18th.—Present: seven members.

CARE OF THE BREEDING EWE.—Mr. F. Ness, who contributed a paper dealing with this subject, said when a line of breeding ewes was purchased, first consideration should be given to the constitution of the animals. The best age for breeding from an ewe was from four-tooth until the teeth commenced to open or become uneven. The only method of making certain that all sheep were sound was to hand-mouth them every year. That should be done soon after shearing, the aged and faulty-mouthed ewes picked out and put in good feed to fatten, and younger ewes purchased to take their place before mating time. Ewes should be mated in time for lambs to be dropped after the green feed had started. A very important point was to keep the ewe in good, strong condition in the autumn while she was carrying the lamb, because it was impossible for the mother to rear a good lamb if she was low in condition when the lamb was dropped. The ewe should be breeched before the commencement of wet weather. That not only added to the health and comfort of the sheep, but also gave it a much better chance to keep free from the blowfly pest. Stinkwort was one of the worst pests of breeding ewes in that district. Trouble could be avoided to a certain extent if the owner frequently moved the sheep or, better still, a paddock should be reserved to help them over that period. If no green feed was available, the sheep should be handfed with oats or chaff.

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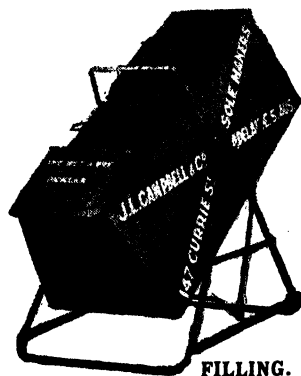
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SHOAL BAY.

April 7th.—Present: 15 members and three visitors.

WORKING THE LAND TO SECURE MAXIMUM RETURNS.—In the course of a paper dealing with this subject, Mr. A. Nash expressed the opinion that a farmer should have at least 200 acres of fallow every year as a stand-by in case of a dry season, because as a rule properly worked fallow gave fair returns. The land set aside for fallow should be well ploughed early in spring, then left until the summer months, when it should be crossed-ploughed or cultivated to conserve moisture. During harvest, sheep should be run on the fallow to eat off weeds. Towards the end of summer the fallow should again be cultivated, care being taken that no ground was missed. After the first rains had fallen, the cultivator should be worked to make a good seed-bed. If the ground was of a limestone or sandy nature, and the season inclined to be dry, he advocated sowing as early as possible with 1½ bush. of oats and 1 cwt. of guano super per acre. On the heavy clay soil 1 bush. of Prior's barley and 1 cwt. of 45 per cent. super should be sown. On land that had been previously cropped, he recommended ploughing to a depth of 2 in. directly the first rains fell. That land could then be left for a month to six weeks, during which time sheep should be kept on it to keep down weeds and improve the fertility of the soil. The ground should then be reploughed, left for about a fortnight, and subsequently cultivated as many times as possible before drilling. It should be borne in mind that every time the land was worked it meant practically another bag of grain per acre. No doubt there were places in the district where land would produce good crops with very little cultivation, but for the whole of the district the man that cultivated well would come out best. During the discussion that followed it was generally agreed that the area of fallow mentioned by the writer was too large for the district.

STIRLING.

April 4th.—Present: 10 members.

TREEPLANTING.—In the course of a paper dealing with this subject, Mr. G. Noble said the preparation of the soil in which trees were to be planted played an important part in the successful growing of trees. The ground should be trenched to a depth of 12 in. to 18 in. Deep cultivation was important, because it assisted the soil to retain the heat of the sun in winter and the moisture in summer. The cultivation of the area to be planted was a much better plan than taking out holes for each tree, but if the nature of the site made it necessary to dig holes they should be made 4 ft. square at the top. The top soil should be removed and placed on one side. The subsoil should be taken out to a depth of 18 in. to 2 ft., and it should not be mixed with the top soil, but put back as near as possible in the way in which it was taken out. If the subsoil was very stony it was not advisable to put too much of it back into the holes. If possible, some good surface soil should be substituted. All land and holes that were intended for tree planting should be prepared some time beforehand, so that the soil would receive full benefit of sun and air. Next, a stake should be driven into the soil where it was intended to plant the tree. One stake should be sufficient for each. The tree should be placed close against the stake and tied firmly with binder twine. All trees, shrubs, hedge plants, &c., should be staked, because the wind formed a hole at the base of the plant which allowed too much air and water to get into the soil. Bone dust was the best manure for trees, but any old material such as bones, leaves, &c., could be used. Fresh stable manure should not be used for young trees. Mulching was very important, and hoeing about once a month or after heavy rains formed a good mulch. Grass, ferns, sticks, &c., could be used so that the heat of the sun would be broken at the base of the tree. The tree should not be planted when the ground was very wet and muddy. Advantage should be taken of the first cloudy and damp day. A hole should be taken out around the stake, and the tree placed close up against it, any damaged roots being first cut off from the tree. The roots should be spread out and the hole filled with good fine soil, the foot being used to firm it around the tree. For fruit trees, he recommended planting 18 ft. to 20 ft. apart. Evergreen trees should be planted in March or April. The first two years of the life of the tree were the most important from a growing point of view, and during the first six months every effort should be made to make the trees grow strongly and rapidly. Deep cultivation was

important, but good drainage was most essential to enable surplus water to pass away.

On March 14th the Branch was represented at the local show by a very fine exhibit, comprising rope, home made, and a cricket bat, made from a willow growing in Aldgate. Sauces, pickles, dried herbs, and a collection of 34 varieties of apples from the Mylor Typical Orchard also formed part of the exhibit.

TWEEDVALE.

March 12th.—Present: 46 members and four visitors.

BREEDING AND FEEDING PIGS.—“Pig raising is the most profitable sideline to work in conjunction with dairying or fruit growing,” said Mr. A. Sickerdiek, in the course of a paper dealing with the above subject. Continuing, he said the site selected for sties should be on a sloping piece of ground. Each sty should be about 9ft. x 8ft. The best material to use was either stone, brick, or concrete, although sawn timber made good sties. The greater part of the floor should be made of brick or concrete, but slabs should be used for the portion on which the pigs were to sleep. For the latter purpose he had used wood blocks, and they had proved very satisfactory. The roof should be of iron. Palings made a cool sty for the summer, but they were not so lasting as iron. A small yard, about 9ft x 9ft., at the back of each sty was very necessary to the sow and piglets, because it gave the sow the opportunity of getting out in the sunlight, and provided a means of exercise. In selecting the boar, one should be careful to avoid an animal with inbent knees and hind feet set too closely together. Sows should be selected from large litters, and should have not less than 12 teats, well spaced apart. Length was also very important in a sow, because it gave ample room for the udder and plenty of room to suckle a large litter. The sow should be quiet and of good disposition; nervous sows were seldom satisfactory mothers. At

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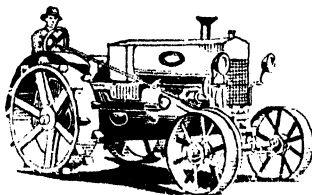
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nine months old the boar would be ready for service. Sows should be the same age before being mated. Neither sows nor boar should be confined in a small sty, but should have plenty of exercise. That would keep the pigs healthy, and the cost of feeding would be considerably reduced if good grazing, such as barley, oats, clover, or any other green feed were provided. The gestation period of the sow was 16 weeks. A fortnight before the sow was to farrow she should be brought into the sty, which should have a rail about 9in. from the side of the floor, so that if she were to lie down the young pigs could get out of her way and avoid being crushed. As the time of farrowing approached, the sty should be kept clean and dry. Only short bedding should be provided. Clean pea chaff made excellent bedding, and should be used until the piglets were a fortnight old. The first few days after farrowing the sow should be fed sparingly, after which her feed should be gradually increased until she would eat as much food as she could consume. Skim milk with bran and pollard, with any green feed in season, made a good ration for the sow. When the piglets were a week or a fortnight old a small opening should be made in the sty so that they could get out to run about. When the pigs were from three weeks to four weeks old a small trough with skim milk and pollard in it should be placed in front of the opening, when it would be found that the little pigs would commence to feed almost immediately. During the gestation period, the sow should not be confined in a small sty and fed on rich food, because she would put on too much flesh. At from six weeks to eight weeks old the pigs could be weaned. After weaning, he had found that if the pigs were allowed to run about for a few weeks, and given good green feed in addition to being fed with skim milk and pollard, they would make good growth. The pigs should then be brought into the fattening pen. Price was the determining factor of the class of food that should be used for fattening. Pollard, wheat, barley, and peas were all valuable foods; they should not be fed whole, but either ground or boiled. In the first stages of fattening, fruit, such as apples and pears, could be turned to profitable account, and mangolds fed in addition to grain made an excellent food. Pigs that were being fattened should be fed three times a day, and given as much as they could consume. They should be ready for market when six months old. Past experience had shown that through the lack of a suitable export trade there were periods of glutted markets, when prices were unpayable. At those times many breeders disposed of their breeding stock, but the man who stuck to breeding would come out on top, because after a slump prices increased, and he would be compensated for the loss sustained during the slump.

DAIRYING.—At a meeting held on April 2nd, Mr. W. H. Fechner read a paper dealing with "Dairying," in the course of which he stated that dairymen would find it a great advantage if the holding was subdivided into small paddocks, so that the herd could be frequently moved from pasture to pasture. A herd that was allowed to roam all over the farm every day would not consume the same amount of feed as a herd that was changed from one paddock to another, consequently the herd that was changed frequently would produce the most milk. Again, a small enclosure, where the herd could be confined to a small area at night, was very useful. If the herd was kept in the same paddock every night for some time, that paddock could then be cultivated and profitably sown with fodder without extra manuring. When starting a herd, the dairyman should decide on one breed, and stick to it. If means were limited, he suggested the purchase of three cows and a pure-bred bull; the remainder of the herd, if it consisted of mongrels, being replaced by pure stock as soon as possible. Breeding without feeding would result in failure, so that after the foundation stock had been purchased, the herd should be gradually built up with calves from the pure-bred animals. A calf should be allowed to suck its mother for at least two days, then it should be penned up, out of sight of the mother, and fed on new milk for no less than a fortnight; after that the quantity of new milk could be gradually cut down, and skim milk or artificial food used as a substitute, until the calf was three months old. A calf that was tethered would not thrive so well as one which was allowed exercise. He advised putting the calf in a large yard or, better still, a small paddock, fenced with six wires, to prevent the calf from developing the habit of crawling or jumping fences. If there was not enough green feed

at weaning time, the calf should be fed on bran and chaff until there was sufficient pasture to keep the calf in good growing condition. If a heifer was well grown she could be mated at the age of two years; if not well grown, it would be advisable to let her go three months longer. Cows should always be milked regularly. The dairy cow should never be ill-treated. If she was restless, and kicked, the cause would probably be found if the teats and udder were examined. If a teat was torn, a few drops of oil applied five minutes or 10 minutes before milking would soften the scab, and prevent the sore from breaking, and the cow would stand more quietly whilst being milked. Every good cow should be dry for eight weeks to ten weeks, but she should not be turned out in the so-called "back" or "scrub" paddock. It should be remembered that the food given a cow whilst she was dry was not wasted, but would be well repaid when the cow was again in milk. A few cows well bred and fed would show a larger profit than twice the number of ill-bred and ill-fed mongrels.

IRONBANK, March 21st.—The subject "Marketing Fruit and Vegetables" was brought before the meeting, and a keen discussion ensued.

LENSWOOD AND FOREST RANGE, March 30th.—The meeting took the form of a "Question Box" evening, when several horticultural subjects were brought forward and discussed.

LONGWOOD, March 7th.—The monthly meeting was held at the residence of Mr. J. R. Coles. Portions of the orchard and garden were inspected, and several subjects of local interest were brought forward for discussion.

McLAREN FLAT, March 12th.—Mr. R. Pengilly, a member of the Aldinga Branch, read a paper, "Forage Plants." Mr. C. Lovelock, who is also a member of the Aldinga Branch, was present, and read a paper, "The Aim of the Agricultural Bureau."

Two a Month

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McLAREN FLAT, April 16th.—Mr. C. H. Beaumont (Orchard Instructor and Inspector) delivered an address, "Dehydration." A paper, "Currant Drying," was read by Mr. A. Fraser, and an interesting discussion ensued.

MOUNT PLEASANT, March 13th.—Members discussed the subject "Top Dressing Pastures." Arrangements were also made to stage an exhibit at the forthcoming agricultural show.

RAPID BAY, April 9th.—Thirty-one members attended the April meeting, when an interesting and instructive paper, "The Life and Works of Luther Burbank," was read by the Rev. E. Lawson.

SOUTH-EAST DISTRICT.

LUCINDALE (Average annual rainfall, 23.32in.).

January 31st.—Present: eight members.

POULTRY AS A SIDELINE ON THE FARM.—Mr. P. W. Dow, in the course of an address on this subject, spoke of the egg-laying capacity of the White Leghorn and the table virtues of the Game breeds. In his opinion, however, the best fowl for the farm was one which combined the good qualities of each. So far as a dual purpose fowl for the farm was concerned, he favored the Rhode Island Red. Mr. Dow also referred to the selection of the stock and the need for careful attention to cleanliness, and the provision of greenfeed, shell grit, gravel, and meat or meal. Early spring hatching was favored for best egg-laying results. Newly hatched chicks should be kept without food for the first 48 hours. The farmer should endeavor to avoid flock breeding during the glut of the egg season. Referring to ducks, Mr. Dow preferred Indian Runners for egg production in that district. Ducks lost weight very considerably in transit over long distances, and he did not recommend keeping them for marketing along the lines of meat production.

A further meeting was held on March 19th, when the Director of Agriculture (Professor Arthur J. Perkins) delivered an address, "Improvement of Pastures." During the afternoon the Director was motored around the district, and inspected Mr. G. Langberg's property.

NARACOORTE (Average annual rainfall, 22.60in.).

December 12th.—Present: 11 members.

Members discussed the subject, "Dry Pickling of Wheat." Mr. W. Rogers tabled a sheaf of "Yielder" oats, the seed of which had been obtained from the Department of Agriculture. The crop had grown to a fair height, and headed well, but the straw was very coarse.

BEEKEEPING.—At a further meeting held on February 14th the following paper was read by Mr. T. Ekers:—"First of all, the selection of an apiary site is important. It is advantageous for the beekeeper to select a site with a variety of timber surrounding it, and with a good supply of fresh clean water near at hand. If this can be found much moving of bees and carting of water can be avoided. It must be borne in mind that Australian honey is produced principally from virgin forests of eucalypts, and the beekeeper must of necessity have a good knowledge of the flowering seasons and habits of the trees. The selection of the breed of bees to be kept is to be considered. Many discussions have taken place regarding the relative values of the different breeds. The most successful beekeepers, both in America and Australia, are agreed that for all-round production, docility, and longevity the pure-bred Italian bees are unsurpassed. An apiary of docile bees is a boon to the operator, because it enables the beekeeper to

work in comfort, and consequently more rapidly. The selection of the hive is also important. Commercial beekeeping can only be successful with a properly designed frame hive. The type of hive is immaterial, provided it is built according to certain commonsense requirements. It is essential that all hives in the apiary should be composed of some certain standard interchangeable parts; all frames, hive bodies, lids, and bottom boards should be interchangeable. Without this the beekeeper is liable to lay up trouble for himself. What is known as the box hive is by law prohibited in many parts of Victoria, New South Wales, and New Zealand, and it would be well for the beekeeper if such were the case in all countries where beekeeping is carried on extensively. Without the frame hive an examination of the colony is impossible. Therefore, disease cannot be detected until too late. With the frame hive every part is available for examination, and the operator can at once detect any sign of disease. The bees build drone and worker comb at will, and as it is required that the number of drones or male bees be reduced to a minimum, it is naturally wasteful that any excess of drones should exist. The male bees consume large quantities of honey, not only during the period of their development, but in the mature stage as well. They are helpless, and it requires a host of nurse bees to feed and care for them. In the box hive no control can be exercised over the production of the drone, but in the frame hive, with the use of full sheets of comb foundation, this can be reduced to a minimum. The box hive is not economical for the harvesting of the honey, it being necessary to cut out the combs, and either strain or melt the honey out of them, the straining process being too slow for practical purposes, and the melting having a tendency to spoil both the color and flavor of the honey. Of course, so much wax is obtained, but when we consider that the bees use approximately 15lbs. of honey to produce 1lb. of wax, and that is to say 15lbs. of honey at 4d. lb. (5s.) to make 1lb. of wax at 1s. 3d., it is readily seen that it is not economical to take away the bees' storeroom, and compel them to build afresh, whereas with the frame hive the combs, after being uncapped, are placed in the extractor, the honey removed, and the frames replaced intact in the hives ready for refilling with honey. In the box hive we have no means of controlling swarming and queen breeding. Even to the man who has one hive in his back-yard I would say, do not use the box hive. The frame hive, even if home made, and not conforming to the standard, will supply a far greater quantity of honey with far less discomfort, both to operator and bees. Mention was made earlier of the selection of the breed of bees, and the beekeeper, working under difficulties, is gradually producing the prolific queen bee, whose progeny are fast and long-distance fliers, non-swarmer, docile, and great honey-gatherers; but the apiarist is confronted with one serious difficulty, namely, the control of the male parentage. With all domestic livestock this is a simple matter, but as the mating of the queen bee always takes place during flight (one mating sufficing for a lifetime), it is impossible to control the male parentage. Nevertheless, by careful culling and using only the selected queens for breeding, and by the elimination of all but the choicest, and by keeping all hives requeened with only tested queens, great advance has been made. The average beekeeper, whose aim is honey production, may convert the whole of his apiary very quickly by purchasing queens from a reliable source, and requeening each hive, or with a little trouble and care may in one season obtain a fairly pure strain. This matter of breed is of importance, as one hive of good honey producers is more to be desired than many poor hives. The necessary points to observe in beekeeping as a commercial proposition may be summed up as follows:—A good strain of proved honey-gatherers, sound weather-proof frame hives, a knowledge of conditions in regard to honey-producing flora, a good apiary site, a convenient and thorough plant, and a love of the job. Lastly, if there is not sufficient bees to occupy your time and you want more work, get more bees." Mr. A. Langeludecke, jun., showed a sample of Sir Douglas Haig oats he had raised from seed supplied by the Advisory Board of Agriculture to test alongside Algerian grown under the same conditions. He showed sheaves of the Algerian and Sir Douglas Haig oats, and samples of the seed from the heads. He sowed 2oz. of seed of each with half a pound of super on June 21st, and both were stripped on December 29th. The Sir Douglas Haig yielded 3lbs. 14oz. of seed and the Algerian 2lbs. 9oz. of seed. The Sir Douglas Haig straw was coarser than the Algerian.

KYBYBOLITE, April 7.—Mr. E. L. Billinghamurst (orchardist, Kybybolite Orchard) read a paper, "Diseases of Fruit Trees," and an interesting discussion followed.

PENOLA, April 4th.—Mr. D. Adamson read a paper, "Experimental Plots." The report of the delegates who attended the South-Eastern Conference was received and discussed.

RENDELSHAM, February 9th.—Several subjects of local interest were brought before the meeting, particular attention being given to the trouble that was caused by an insect locally known as "red spider."

"DRY" PICKLING OF WHEAT.

[These questions, Nos. 1 to 4, were submitted by an Eyre Peninsula farmer, and replied to by the Chief Agricultural Instructor (Mr. W. J. Spafford)].

1. Can a "dusting" machine be made by putting a spindle horizontally through a barrel when it is standing on end, and fitting one end as a door?

A barrel would make an effective "dusting" machine in which to treat seed wheat with powdered copper carbonate, provided that (a) sufficient "beaters" are fixed on the spindle inside the barrel, (b) the door and spindle are made dust-proof, (c) the barrel is only half-filled with seed each time, and (d) the machine is revolved slowly whilst doing the dusting.

2. How much copper carbonate is used to "pickle" the seed?

It requires 2oz. of very finely-ground copper carbonate to treat a bushel of seed properly. The copper carbonate should be of such purity as to contain at least 50 per cent. metallic copper, and should be so finely ground that 90 per cent. of it will pass through a 200-mesh sieve.

3. Where can finely ground copper carbonate be obtained?

Practically all firms which supply farmers' requisites now stock copper carbonate for treating seed wheat.

4. Does copper carbonate lead to the corrosion of the working parts of the seed drill?

Copper carbonate is not sufficiently soluble in water to lead to the corrosion of parts of the drill, but if a great excess of the powder is used, it might possibly clog some working parts of the drill, as would be expected if much powder of any kind was put in the machine.

WOOLLY APHIS.

Black leaf 40 and red oil are, according to the Horticultural Instructor (Mr. Geo. Quinn), both reasonably effective against woolly aphides. The oil may be used strongly in the dormant season of the apple trees, and the tobacco extract when they are in foliage. The Department has found the "spray pistol" or "spray gun" nozzles most suitable means of distribution, as the spray may be concentrated with great force on the patches of blight. After all, these are only palliatives, and depend for their value on repeated applications according to the season. If he were confined to the use of one of them, Mr. Quinn says, he would prefer the tobacco compound.

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T. BUTTERFIELD,
Minister of Agriculture.

POINTS FOR PRODUCERS.

Supplementary Spray for Black Spot.

During the past apple season, a considerable proportion of the fruit was disfigured by black spot fungus (*Fusicladium*). The usual treatment for this is to spray the trees in the early spring with Bordeaux or Burgundy mixtures, followed later in some instances by lime sulphur compounds to ward off attacks of the disease which may develop after the fruits have set. This spray has been adopted in preference to copper compounds, owing to the fact that the last-named have been proved to increase the russetting of the skins of the fruits. There has been some question as to whether additional treatment might be adopted to check this disease, and the Horticultural Branch of the Department of Agriculture has suggested, and is putting to test this season at the Blackwood Experiment Orchard, a strong copper spraying in the autumn, when the leaves are falling freely from the trees. Good results have been obtained there for many years past by this autumn spraying when applied to stone fruits for the suppression of shot hole fungus, and it has also been observed that peach trees sprayed in this manner have burst into leaf almost free from the curl leaf fungus, despite the fact that no additional spray was applied.

Agricultural Bureau Congress.

The thirty-sixth Annual Congress of the Agricultural Bureau of South Australia is to be held in Adelaide on Monday, Tuesday, and Wednesday of the week in which the Royal Agricultural and Horticultural Society holds its 1925 Spring Show. A committee, consisting of Mr. W. S. Kelly (Chairman of the Advisory Board of Agriculture), Professor Arthur J. Perkins (Director of Agriculture), Dr. A. E. V. Richardson, Mr. W. J. Colebatch, B.Sc. (Agric.), and Mr. H. J. Finnis (Secretary of the Advisory Board of Agriculture) will arrange the agenda. Branches of the Agricultural Bureau have been asked to suggest subjects for inclusion thereon.

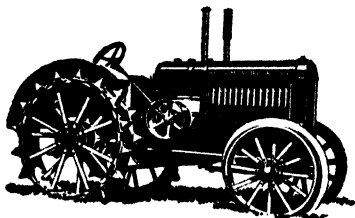
Fertilizers.

The Fertilizers Act is administered by the Horticultural Branch of the Department of Agriculture, and during the past two months Inspectors have collected samples of fertilizers throughout the country districts of South Australia. These are now being analysed for the purpose of ascertaining whether the fertilizers sold are in accordance with the terms of the guarantee of the maker. The Horticultural Instructor (Mr. Geo. Quinn) stated recently that so far as results are available, there is no reason to believe that any of the manures on the market are inferior to the quality guaranteed. As a matter of fact, he added, it stood to the credit of manufacturers that in the majority of instances analyses had revealed that generally the manures supplied since this legislation was introduced were richer than the guaranteed quality.

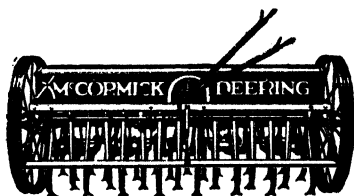
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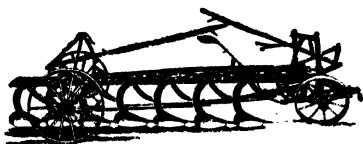
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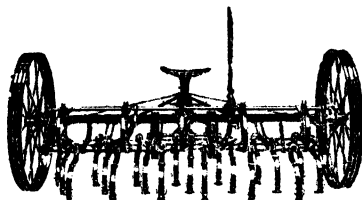
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Manurial Tests with Sown Pastures.

At the request of the Gumeracha Branch of the Agricultural Bureau, the Department of Agriculture is laying out a series of experiment plots on the holding of Mr. T. G. Clark, of Birdwood. The plots will be seeded this week. To test the effects of different manures on the sown pastures, six plots approximately 5 acres in area each, will be seeded with a mixture of perennial rye grass, Italian rye grass, cocksfoot, timothy, *Phalaris bulbosa*, meadow foxtail, crested dogstail, tall fescue, hard fescue, creeping bent, chicory, sheep's burnet, lucerne, perennial red clover, alsike clover, white clover. Of these six plots, No. 1 is to receive no manurial dressing, whilst the other five will be manured as follows:—No. 2, 469lbs. raw rock phosphate (82 per cent.), 112lbs. superphosphate (45 per cent.) (equalling 200lbs. P_2O_5 per acre every five years). No. 3, 194lbs. superphosphate (45 per cent.) per acre per year (equalling 200lbs. P_2O_5 per acre in five years). No. 4, 10cwts. freshly burnt lime per acre every five years and 194lbs. superphosphate (45 per cent.) per acre annually. No. 5, 30cwts. gypsum every five years and 194lbs. superphosphate (45 per cent.) annually. No. 6, 194lbs. superphosphate (45 per cent.) and 1cwt. sulphate of ammonia per acre annually. In addition to these, five acres will be devoted to demonstration plots of sown pastures. This area will be dressed with 194lbs. (45 per cent.) superphosphate per acre annually. It will be divided into 15 plots, which will be sown respectively with the following fodders and grasses:—Perennial rye grass, 10lbs.; Italian rye grass, 10lbs.; cocksfoot, 6lbs.; timothy, 4lbs.; *Phalaris bulbosa*, 3lbs.; prairie grass, 15lbs.; meadow foxtail, 6lbs.; crested dogstail, 5lbs.; tall fescue, 5lbs.; perennial red clover, 4lbs.; alsike clover, 3lbs.; white clover, 3lbs.; lucerne, 5lbs.; sweet clover (white), 5lbs.; subterranean clover, 2lbs.

The Value of Fallowing.

During the past 9 years, plots designed to test the relative advantages of fallow, early and late, for wheat have been under observation at the Government Experimental Farm, Booborowie. Necessarily, the same variety of wheat and the same manurial dressing have been applied to each plot, the variable factor being the method of cultivation only. The inferences that have been drawn from the results secured to date are that under conditions similar to those existing at Booborowie, bare fallowing the land, either early or late, and irrespective of subsequent cultivation, returns an increased yield of from 6bush. 11lbs. per acre to 9bush. 29lbs. per acre above the yield secured from land that has not been fallowed. Heaviest returns have been obtained from fallowed land prepared in accordance with the recognised practice of the district, *i.e.*, ploughed early (July), left rough throughout the winter, and then cultivated or harrowed whenever a surface crust or weeds rendered it necessary. It has also been shown that land ploughed in July in preparation for bare fallow will yield 2bush. 22lbs. per acre more than will land ploughed in September.

Mortality Amongst Sheep.

The Department of Agriculture has, at the Demonstration Farm, Turretfield, sustained the loss of a number of sheep from a trouble which apparently is rather general in many parts of the State at this particular time of the year. The mortality at the Turretfield Farm was brought under the notice of the Stock Department by the Director of Agriculture (Professor Arthur J. Perkins). That department has intimated that it is commonly considered by stockowners to be due to stinkwort (*Inula graveolens*), but up to the present no definite evidence has been secured to incriminate this plant. Experiments have been carried out at the Laboratory, Adelaide Hospital, from time to time in the last few years by feeding sheep on the plant at all stages of growth, and, in addition, drenching them with extracts made from the stinkwort, without producing any symptoms of a toxic nature.

In other States of Australia there is another disease of sheep which is bacterial in origin, and has been known for many years under various names, such as braxy, malignant transudation, black disease, etc. It has been investigated, particularly in New South Wales, by Dr. Dodd. This investigator isolated an organism capable of producing the disease, the main characteristic of which is the suddenness of death, sheep generally being found dead on the pasturage. It is very seldom that a sick animal is seen. If one is noticed, it only lives a few minutes before death occurs.

This disease is known in New South Wales as black disease, the name originating from the fact that the skin rapidly changes color after death. In some parts of Europe, and especially Iceland and Scotland, a disease has been known for many years, and recent investigations have proved that a specific bacterium is the causal agent. This, however, differs from that isolated by Dr. Dodd, in New South Wales. In South Australia, in most of the settled farming areas, a disease climatically the same has been reported, and investigated from time to time by officers of the Stock Department, but up till the present no causal organism has been established, and it has been classified as braxy-like in character, and it is in this category that the department places the disease of sheep causing mortality at Turretfield.

The cause not being known, the only advice that can be given is to change the sheep into different paddocks and hand feed them.

PRUNING COMPETITIONS.

At a meeting of representatives of the Agricultural Bureau, held at Waikerie recently, the following programme of pruning competitions was adopted for the coming season:—

District Competitions.—Mypolonga, Thursday, July 2nd; Renmark, Wednesday, July 8th; Berri, Thursday, July 9th; Moorook, Monday, July 13th; Waikerie, Tuesday, July 14th; Cadell, Wednesday, July 15th.

Championship Competitions.—Waikerie, Thursday, July 16th.

As usual, the competitions will be divided into two classes, namely, vine pruning and fruit tree pruning.

INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

[Replies supplied by Mr. ALAN H. ROBIN, B.V.Sc., Veterinary Officer, Stock and Brands Department.]

"L. E. O., Glengarry, has horse with stake in the frog.

Reply—The wound made by the stake must be opened up with a horn knife as much as safely possible to allow free drainage for any discharge. Clean the foot to remove all dirt, then soak foot for half an hour in a bucket of warm clean water containing disinfectant. Then take the foot out of the antiseptic bath and wipe it dry with a piece of clean sacking or rag, holding it off the ground to avoid contamination with dirt. Holding foot with sole turned upwards, pour a few drops of tincture of iodine into the wound, so that it can run right in. Plug the wound cavity with a small piece of tow or cotton wool soaked in iodine tincture. Finally cover the foot all over with a piece of clean sacking. Repeat the bath and dressing daily until discharge finally stops. Then plug the wound with a piece of tow soaked in Stockholm tar, and put a leather pad under the shoe.

"F. J. R.," Yaninee, has filly with heavy cold, coughing, and discharging phlegm.

Reply—Take good care of the animal, and do not expose her to cold, wet weather, or she may become seriously ill. See that she is provided with warm, comfortable quarters without pampering her. Keep her away from other horses. Give damped, easily digested feed, and put two tablespoonfuls of solution of arsenic in the feed once daily for a fortnight. Have the following made up and administered. It will help her to throw off the cold:—Green extract belladonna, 2oz.; potass. chlorate, 4oz.; camphor, 2oz.; treacle, added enough to make a stiff paste. Put a lump about the size of a walnut on her back teeth two or three times daily.

"E. D. E.," Pygery, has draught mare with lump on the point of the shoulder.

Reply—The condition is most probably a tumor forming under the skin, due to a specific organism known as botriomycosis. It is likely to go on growing, and may perhaps ultimately break down, discharge pus, through the skin wound. The only satisfactory treatment is entire removal of it by a surgical operation, and you would have to consult a qualified veterinary surgeon.

"H. M.," Lone Gum, has mare with an irritating eruption below the skin, the trouble being chiefly on the hind legs.

Reply—Give the mare a good dose of physic, preferably an aloes ball. If this is not available, give a drench of 1lb. Epsom salts in water. Subsequently feed on sloppy feed, and put a handful of Epsom salts in the feed night and morning for a week, or, if possible, give green feed in the ration. Two tablespoonfuls of Fowler's solution of arsenic should be given daily for a fortnight. Give the affected parts of the skin a good bathing with warm water and good soap, adding a little lysol to the water. Dry thoroughly after washing. This

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may be repeated as necessary twice a week. If the part remains itchy, this can be checked by daubing the skin with a saturated solution of bicarbonate of soda in cold water.

"F. H. W.," Rosedale, reports draught horse when worked becomes lame, and develops a swelling on the chest.

Reply—Evidently the trouble is due to jarring of the chest while in draught. Apply hot fomentations to swollen part, and massage firmly but gently with hands. This should help to soften and remove the swelling. If abscess formation should occur, it should be syringed out with weak antiseptic solutions. Give the horse a dose of physic, preferably an aloes ball, or 1lb. Epsom salts dissolved in water and given as a drench. Keep on sloppy feed, and put a handful of Epsom salts in it night and morning for a week.

Hon. Secretary, Hartley Agricultural Bureau, asks "What is the cause of ruptured pigs?"

Reply—This condition is generally attributed to the sow overlying the young pigs when housed in small sties.

"A. C. T.," Glencoe West, has sow weak in the legs, "tucked-up" appearance, and labored breathing.

Reply—The animal may have got a chill. See that she is kept in a sty that is warm, comfortable, and dry. Give 2cz. to 3oz. raw linseed oil occasionally as a drench to ensure the proper working of the bowels. Give 20 grains carbonate of ammonia night and morning in a little cold gruel. If possible, supplement the ration with a little green feed, preferably some legume if available. When acute symptoms are modified, permit daily exercise. A little air-slaked lime and phosphate of lime can advantageously be added to her feed trough daily.

"Inquirer," Wudinna, has horse that, when drinking, the water runs back through the nose. Slight cough, and discharge from the nostrils.

Reply—The symptoms are those of catarrh with laryngitis (sore throat). Do not drench him. Give the following electuary:—Chlorate of potash 1oz., camphor powdered 1oz., honey 4oz., glycerine 4oz.; mix. Give one tablespoonful twice daily on the tongue. Water with a bucket, and do not allow him to foul the drinking water for the other horses. If there is a swelling of the throat, rub daily with soap liniment. The case will respond satisfactorily to treatment if it is not due to some chronic disease in the region of the throat.

"N. S. E.," Streaky Bay, asks, "What quantity of arsenic in solution should be given to cows affected with dry bibe?"

Reply—Arsenic (given in the form of Fowler's solution) may be given to cows in doses of 1oz. (two tablespoonfuls) daily, but it will not prove very effective as a cure for "dry bibe." For this, give a drench of Epsom salts 1lb., honey or molasses ½lb., water 1 quart. Give the cow a quart of strong black coffee twice daily. If eating, put three or four tablespoonfuls of sweet ground bonemeal or superphosphate (the former for preference) and 2oz. of common salt in sloppy feed daily.

"W. M.," Narrung, reports death of light horses. Horses have been fed in the stable and grazed on lucerne. After being ridden show signs of distress, profuse perspiration, and loss of control of front legs. Unable to rise; legs and neck stiff.

Reply—The animals are affected with the disease known as forage poisoning (also called toxæmic paralysis or staggers). It is somewhat akin to ptomaine poisoning in human beings. The cause of the trouble is the formation in the feed of a toxin produced by an organism present. This toxin, when absorbed into the system produces the disease. As a general rule, the feed looks to be to the naked eye in perfectly wholesome and sweet condition, and, although you may find it is hard to believe that this feed is the cause of the trouble, you must accept our opinion that it is so. I refer to the dry stable feed, not the lucerne. As this dry feed is the cause of the trouble, you should take steps to change it, and put the horses on to fresh feed preferably. If you still have to feed it, then you can do so by first exposing it for about 12 hours to direct sunlight, which will destroy

any toxin in it. If you are feeding hay, open up the sheaves and spread them on the ground exposed to the sun for a day before feeding them. If using chaff, spread it out in boxes to the sun. If any grain is being fed, it can be soaked in cold water for some hours, as the toxin is water soluble. The dried grain can then be fed to the horses, but the water must be carefully disposed of so that stock cannot drink it. Treatment of animals affected is not very satisfactory, but the following lines are suggested for treatment in the early stages:—(1) If the horse is down, try to get him up; put him in slings, or sling him before he is so far gone as to go down. (2) Give an aloes ball or 1lb. of Epsom salts in water as a drench. (3) Give a teaspoonful of tinct. nux vomica two or three times a day, or a quart of strong black coffee twice daily. (4) If he feeds, feed on sloppy food, and put a handful of Epsom salts in the feed night and morning after the purgative effects of the physic have eased off. (5) Water from a bucket, and dissolve 1oz. of ordinary photographer's hypo. in each bucketful. (6) As retention of urine usually complicates matters, take periodical precautions to relieve this condition if necessary.

"A. E. R.," Minlaton, has mare kicked on the point of the hock; animal is lame.

Reply—Give the hock a good occasional rubbing with camphorated liniment, or apply a blister, and spell her. Do not put the blister on front of hock or point of hock, but apply broadly to both sides.

Hon. Secretary, Black Springs Agricultural Bureau, asks the symptoms of dry bible in cattle.

Reply—Usually the most common symptoms indicative of so-called dry bible in the cows are:—Animal goes off feed more or less completely, and stops chewing her cud. She looks dull and sluggish, and there may be constipation or diarrhoea either independently or alternating. Nose is often dry, and she may have a grunt. Fever may be more or less marked. If the ear is placed on the left flank over the paunch the normal churning sounds are found to be absent. There is frequently some more or less staggering of the gait of the animal.

[Replies supplied by Mr. C. McKenna, B.V.Sc., M.R.C.V.S., Veterinary Officer, Stock and Brands Department.]

"W. S.," Murraytown, has young pigs weak in the back and unable to stand.

Reply—The pigs are suffering from ricketts, a disease brought on by improper feeding. Prevention is accomplished by feeding good nutritious food in a balanced ration, by allowing young pigs plenty of exercise, preferably at grazing, and by supplying clean, warm, and well-ventilated sties. Treatment consists in carrying out the above measures, and giving each pig a tablespoonful of cod liver oil twice daily and a teaspoonful of sweet ground bonemeal well mixed in the feed night and morning.

"J. H.," Yeelanna, reports death of wethers. Post mortem showed that the bladder had burst.

Reply—The condition is probably the result of calculi, causing an obstruction to the flow of urine from bladder. Wethers, and occasionally young rams, in good condition, and fed on rich feed, are chiefly affected. The obstruction may be at the worm-like end of the pizzle, and if so this portion of the organ should be amputated. Note that in rams its removal may lead to sterility. More commonly the calculi in the form of a sand-like deposit block the opening of the sheath, and set up inflammation and swelling of that part, with resultant pressure on, and stoppage of urine flow. In this case treatment consists in opening up the sheath with a sharp knife and cleaning it out. Dress the wound daily with mild antiseptic. This latter condition can be avoided by keeping the wool clipped short around the opening. Do not, however, clip off long hairs which help to drain urine away. Prevention of calculi consists in putting all wethers and rams,

when condition first noticed, on to change of pasture, preferably poorer, and bicarbonate of soda (at the rate of handful per 100 sheep) placed in water troughs three or four times weekly.

Hon. Secretary, Agricultural Bureau, Wepowie, reports cows stiff in legs, unable to pass manure, and the animals are nearly always lying down.

Reply—The illness is probably dietetic in origin, and due to a deficiency of phosphorus and lime in the feed. I advise the following treatment for each cow:—A purgative drench of Epsom salts 1lb., ginger 2oz., treacle 3lb., warm water 1½ pints should first be given. Then give two teaspoonfuls of powdered nux vomica twice daily for 10 days. Further mix daily four tablespoonfuls of sweet ground bone meal and 2oz. salt in the feed. Plenty of clean water should be made available, and the animals should be handled with good-quality chaff and bran.

“M. A. P.” Pyap West, has draught mare unable to rise without assistance. Swelling under belly and the joints. Stifle and fetlock joints also been swollen.

Reply—The symptoms described are those of articular rheumatism. Treatment is as follows:—Give a good purgative; an aloes ball is the best. Subsequently the bowels should be kept in a relaxed condition by mixing a handful of Epsom salts in damped feed night and morning, and giving suitable feed. Only a small quantity of grain should be given, and green feed should form part of the ration. Animal should be kept in a warm well-bedded stable, and given light exercise daily. The affected joints should be fomented with a hot salt solution (teaspoonful to a pint of water) for 10 minutes, dried, and massaged with a good stimulating liniment. Do twice daily for a week. Later a mild biniodide of mercury blister could be applied.

“BLACK SPOT” DISEASE OF CABBAGES AND CAULIFLOWERS.

[By GEOFFREY SAMUEL, B.Sc., Plant Pathologist, “Urrbrae” Agricultural Research Station.]

During the past month this disease, which has hitherto not been reported in South Australia, was identified on cauliflowers from two localities, and there are indications that it may have a much wider range already. It is characterised by a rotting of the leaves, commencing at the margins and working inwards, and on “green-leaved” cauliflowers by death of large parts of the leaf-surface.

It is a disease which, under certain conditions, may cause considerable loss, and which is also very troublesome, in that it persists from year to year in the soil. This brief notice of it is therefore given in order that growers who have recognised it may take precautions against spreading it on their land. A fuller account of it, with illustrations, will be published in the *Journal* next month.

All diseased leaves are highly infected, and should be gathered and burnt, or otherwise thoroughly disposed of; they should never be thrown on a manure heap, which will eventually be returned to the land. The disease may also be carried from one place to another on the boots of men working in the field, or by running water. And, most important of all, the disease may be carried on seed gathered from infected plants.

BOOBOROWIE EXPERIMENTAL FARM HARVEST REPORT.

[By E. A. BRISTOW, Manager.]

This farm is situated 120 miles north of Adelaide and contains 1,484 acres, with an altitude of 1,200ft. to 2,000ft. It consists of two blocks—one, the old North Booborowie homestead, is "high" land, running to the highest point in Brown's Hill Range, and part of the stock road, and containing 1,186 acres; the other (block No. 478), situated two miles from the homestead, containing 298 acres of comparatively level land, which in times of heavy rains is flooded by water from the Tumela Creek. This farm is situated in the centre of a very good district, which contains land suitable for (1) cereal growing, (2) lucerne growing without irrigation, and (3) some first-class grazing land not arable. Typical cereal-growing land and grazing land constitute this farm, although we now have some second-class lucerne land in the recently acquired block of the stock road adjoining the eastern boundary of the homestead.

THE SEASON 1924.

As the rainfall table shows, good rains fell right through the year, excepting, perhaps, the month of July when 117 points of rain were registered.

Rainfall Distribution at Booborowie, 1900-1924.

	Means 1900-							Means 1900-
	1918. In.	1919. In.	1920. In.	1921. In.	1922. In.	1923. In.	1924. In.	1924. In.
January	0.49	0.23	0.22	1.25	1.23	0.26	1.43	0.56
February	0.46	2.56	—	1.12	1.09	—	1.97	0.62
March	0.82	0.05	0.51	1.75	0.15	0.15	0.65	0.75
April	1.00	1.35	0.79	—	1.69	0.16	1.81	0.99
May	1.64	2.42	0.96	2.47	4.14	2.77	1.59	1.83
June	2.51	2.25	4.27	2.92	1.58	2.77	3.40	2.60
July	2.00	1.36	1.88	2.46	3.31	4.28	1.17	2.10
August	2.12	2.01	3.52	2.38	2.50	2.50	2.28	2.22
September	2.11	2.09	2.57	2.79	1.63	3.17	3.27	2.23
October	1.68	1.44	2.11	1.60	0.70	2.30	4.22	1.78
November	1.06	0.85	3.47	0.84	0.06	0.28	1.63	1.09
December	0.93	1.78	1.92	0.92	2.24	2.53	1.16	1.14
Total	16.83	18.39	22.22	20.50	20.32	21.17	24.58	17.91

Useful rainfall April- November)	14.12	13.77	19.57	15.46	15.61	18.23	19.37	14.84
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The total rainfall for the year must be considered good; it is above the average, as is the "useful" rain. As the table shows, January and February rains were above average, as was also the case in November, making the summer rains well above average. Only in one previous year has this rainfall been exceeded, namely, 1917.

Distribution of "Useful" Rainfall, 1900-1924.

	1924.	Means 1900-24.
	In.	In.
Seeding rains (April-May)	3.40	2.82
Winter rains (June-July)	4.57	4.70
Spring rains (August-October)	9.77	6.23
Early summer rains (November)	1.63	1.09
	19.37	14.84

CROPS.

Owing to good summer and April rains the fallows had to be well worked before seeding, when most of the weeds germinated and were killed, and a good seeding without delay resulted, as only 159 points of rain fell during May.

Ensilage Crop.—Field No. 11, which was fallowed in 1922, and carried a wheat crop in 1923, was cultivated between March 5th and 6th and 29th and 31st; was drilled in on March 31st and April 1st with 80lbs. of Calcutta oats and 1ewt. of super per acre. This crop made very heavy growth, and an area of 8 acres was cut, yielding 64 tons, or an average of 8 tons per acre.

Hay Crops.—The area of cereals sown for hay was 76.79 acres. Some stubble land was sown with oats. Field 25 was sown with a number of varieties at the rate of 75lbs. of seed and 2cwts. of super per acre on fallow land. Field 9B was sown with Crossbred 53 at the rate of 75lbs. of seed and 2cwts. of super per acre. Stockroad Field was sown with a number of varieties at the rate of 75lbs. of seed and 2cwts. of super per acre. Field 5 was sown with a number of varieties at the rate of 75lbs. of seed and 2cwts. of super per acre on fallow land. Field 12 was sown with Crossbred 53 at the rate of 75lbs. of seed and 2cwts. of super per acre on fallow land. Field 11 was sown with Calcutta oats at the rate of 80lbs. of seed and 1ewt. of super per acre on stubble land. Field 4 was sown with Calcutta oats at the rate of 80lbs. of seed and 1ewt. of super per acre on stubble land. Fields 2 and 3 were sown with Calcutta oats at the rate of



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80lbs. of seed and 1cwt. of super per acre. The yields of hay obtained from the various fields are set out in the next table:—

Hay Yields, Booborowie, 1924.

Kind.	Field. Grown. No.	Area. Acres.	Total Yield.			Yield per Acre.		
			T.	C.	L.	T.	C.	L.
Wheat headlands	25	6.22	21	0	0	3	7	59
Wheat headlands	Stockroad	12.11	36	0	0	2	19	51
Wheat headlands	5	2.1	6	0	0	2	17	16
Wheat headlands	Exp. plots	2.28	6	0	0	2	12	71
Wheat headlands	12	12.51	31	0	0	2	9	63
Calcutta oats	11	10.5	22	0	0	2	1	101
Wheat headlands	9B	4.43	9	0	0	2	0	71
Calcutta oats	4	12.13	19	0	0	1	11	37
Headlands	23	4.23	6	0	0	1	8	41
Calcutta oats	2 & 3	10.28	14	0	0	1	7	27
Farm average		76.79	170	0	0	2	4	31

The yields obtained must be considered good, because half the area of crop cut was on stubble land.

Hay Returns, Booborowie, 1912-1924.

Year.	Total Rainfall.	"Useful" Rainfall.	Area. Acres.	Total Yield.			Yield per Acre.		
	In.	In.		T.	C.	L.	T.	C.	L.
1912	15.50	13.20	70.00	132	5	0	1	18	88
1913	15.07	10.86	76.00	109	14	0	1	8	97
1914	9.76	7.79	—	Failure			—		
1915	17.14	15.95	52.27	144	15	0	2	15	43
1916	22.41	20.28	37.93	109	14	0	2	17	94
1917	26.70	21.02	58.43	198	19	0	3	8	11
1918	13.87	11.98	51.41	107	0	0	2	1	70
1919	18.39	13.77	75.75	117	0	0	1	10	100
1920	22.22	19.57	75.64	225	0	0	2	19	55
1921	20.50	15.46	47.41	98	0	0	2	1	38
1922	20.32	15.61	88.38	168	0	0	1	18	2
1923	21.17	18.23	76.07	215	0	0	2	16	74
1924	24.58	19.37	76.79	170	0	0	2	4	31
Means	19.05	15.62	—	—			2	3	19

Oat Crops.—Only a small area was devoted to oats for grain, and all oats were grown on stubble land, excepting, approximately four acres, which were sown on fallowed land. Field 25 was sown from April 24th to 30th at the rate of 80lbs. of seed and 1cwt. of super per acre on fallowed land. Field 23 was fallowed in 1922, and carried a wheat crop in 1923, and was sown with Scotch Grey and Algerian oats at the rate of 80lbs. of seed and 1cwt. of super per acre between April 21st and 22nd on stubble land. Field 4 was fallowed in 1922, and carried a wheat crop in 1923, and was sown with Calcutta oats at the rate of 80lbs. of seed and 1cwt. of super per acre between April 2nd and 3rd. The Bathurst Early and Lachlan oats shook out very

badly almost to the last few grains. The Scotch Grey oats in the experimental plots went down very badly owing to the heavy rain which fell on October 21st, when 311 points fell in the one day. The Kherson oat promises well in this locality. The yields received from the oat crops are shown in the table below, with the total and average return for the season:—

Oat Yields, Booborowie, 1924.

Variety.	Field Grown.	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
Kherson	25	1.53	75 24	49 16
Scotch Grey	23	13.88	523 30	37 29
Algerian	23	6.28	180 17	28 29
Calcutta	4	6.53	108 26	16 26
Scotch Grey	Exp. plots	3.17	31 5	9 33
Bathurst Early	25	1.47	8 25	5 35
Lachlan	25	1.17	3 12	2 33
Farm average		34.03	931 19	27 15

Oat Returns, Booborowie, 1913-1924.

Year.	Total Rainfall. In.	"Useful" Rainfall. In.	Area. Acres.	Total Yield Bush. lbs.	Yield per Acre. Bush. lbs.
1913	15.07	10.86	54.00	1,394 13	32 11
1914	9.76	7.79	—	Failure	—
1915	17.14	15.95	75.47	2,410 20	31 38
1916	22.41	20.28	4.23	138 33	32 33
1917	26.70	21.02	4.68	231 25	49 20
1918	13.87	11.98	31.93	863 27	27 2
1919	18.39	13.77	22.40	451 18	20 6
1920	22.22	19.57	19.24	843 20	43 34
1921	20.50	15.46	18.72	445 19	23 32
1922	20.32	15.61	22.89	579 6	25 12
1923	21.17	18.23	24.30	655 4	26 38
1924	24.58	19.37	34.03	931 19	27 15
Means	19.34	15.82	—	—	28 17

Only two varieties have been grown continuously for the past few years, and the yields secured since 1916 are set out in the next table:—

Oat Varieties, Booborowie, 1916-1924.

Year.	Total Rainfall. In.	"Useful" Rainfall. In.	Scotch Grey. Bush. lbs.	Calcutta. Bush. lbs.	Farm Average. Bush. lbs.
1916	22.41	20.28	49 21	28 20	32 33
1917	26.70	21.02	61 20	44 29	49 20
1918	13.87	11.98	33 19	27 8	27 2
1919	18.39	13.77	22 24	21 5	20 6
1920	22.22	19.57	42 30	46 16	43 34
1921	20.50	15.46	32 8	19 8	23 32
1922	20.32	15.61	28 9	23 4	25 12
1923	21.17	18.23	29 12	27 22	26 38
1924	24.58	19.37	32 22	16 26	27 15
Means	21.13	17.25	36 36	28 11	30 80

Barley Crops.—All barley was sown on stubble land at the rate of 60lbs. of seed and 1cwt. of super per acre. Field 23 was cultivated between April 11th and 15th and sown from May 7th to 8th. Details of this year's barley crops are shown in the next table:—

Barley Yields, Booborowie, 1924.

Variety.	Field Grown.	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
Short Head	23	22.27	506 14	22 37
Short Head	Exp. plots	2.89	58 33	20 15
Farm average		25.16	564 47	22 23

None of the barley made heavy growth, but the sample was exceptionally good.

Barley Returns, Booborowie, 1915-1924.

Year.	Total Rainfall.	"Useful" Rainfall.	Area. Acres.	Total Yield. Bush. lbs.		Yield per Acre. Bush. lbs.	
	In.	In.					
1915	17.14	15.95	3.09	108 26		35 6	
1916	22.41	20.28	35.93	1,119 46		31 8	
1917	26.70	21.02	23.65	914 26		38 33	
1918	13.87	11.98	29.11	1,045 23		35 46	
1919	18.39	13.77	32.58	501 1		15 19	
1920	22.22	19.57	35.39	1,087 38		30 37	
1921	20.50	15.46	52.52	1,454 5		27 34	
1922	20.32	15.61	38.53	1,014 35		26 17	
1923	21.17	18.23	35.00	611 27		17 24	
1924	24.58	19.37	25.16	564 47		22 23	
Means	20.73	17.12	—	—		28 5	

Wheat Crops.—As usual, an assortment of wheat varieties was grown this season. The table setting out the yields of the different kinds shows that the best crop produced a yield of 37bush. 50lbs. per acre, whereas the poorest did not yield higher than 16bush. 25lbs. per acre. Testing varieties is essentially one of the operations of an experimental farm, but it has the inevitable effect of reducing the wheat yields considerably below those that could be expected were only the highest yielding varieties grown. All the wheat crops were grown on fallowed land with 75lbs. of seed and 2cwts. of super per acre, and the fields which carried these crops were treated as follows:—

Field 25 was sown with wheat in 1921, and oats and barley in 1922, and was fallowed from July 24th to August 8th, 1923, harrowed August 27th and 29th, cultivated from September 17th to October 8th, cultivated October 31st to November 7th, cultivated between April 24th and 30th, and drilled.

Field 12 was sown with wheat in 1920, and oats 1921, pasture 1922, fallowed 1923 between July 11th and 14th, harrowed August 21st, cultivated September 6th and 7th, cultivated October 17th and 18th, cultivated November 23th and 29th, cultivated and drilled April 17th and 18th.

Field 5 was sown with wheat in 1920, oats in 1921, pasture 1922, and fallowed 1923 between July 6th and 11th, harrowed on August 22nd, cultivated September 4th and 5th, October 14th and 15th, November 27th and 28th, and cultivated and drilled May 16th to 26th.

Field 9b carried oats in 1921, oats 1922, fallowed in 1923 between August 20th and 21st, harrowed on August 22nd, cultivated October 8th and 9th, cultivated and drilled on April 16th.

Field 8a carried wheat in 1922, fallowed 1923 on August 10th, cultivated September 10th, December, and March, cultivated and drilled May 9th.

Stockroad Field, which is virgin land, was fallowed in 1923 between September 19th and October 3rd, harrowed twice October 1st to 6th, rolled October 8th to 10th, cultivated 12th to 18th, harrowed on the 24th and 25th, cultivated October 27th to November 2nd, December 14th to 17th harrowed, February 25th to 29th cultivated, cultivated and drilled from May 26th to 31st. The following table shows the wheat yields for the season 1924:—

Wheat Variety Yields, Booborowie, 1924.

Variety.	Field Grown.	Area, Acres.	Total Yield, Bush. lbs.	Yield per Acre, Bush. lbs.
Nabawa	5	0.84	31 47	37 50
Nungarin	5	1.08	40 38	37 37
Merridin	5	1.21	45 18	37 26
Nangeenan	5	0.90	33 33	37 17
Dan	Stockroad	2.26	83 20	36 52
Carrabin	5	1.61	57 43	35 51
King's White	Stockroad	3.02	101 0	33 27
Marshall's No. 3	25	9.28	310 0	33 24
Caliph	Stockroad	1.97	66 40	33 50
Onas	Stockroad	7.28	235 50	32 24
Geeralying	5	1.98	62 50	31 44
Yandilla King	25	11.95	367 0	30 43
Currawa	Stockroad	6.87	197 1	28 41
Crossbred 53	12	6.15	172 47	28 6
Crossbred 53	5	0.71	19 50	27 56
Major	Stockroad	11.48	316 57	27 37
Belka	Stockroad	1.68	46 0	27 23
Unknown variety	Stockroad	1.56	42 40	27 21
Queen Fan	25	8.08	218 50	27 5
Queen Fan	Stockroad	1.86	46 40	25 5
Hard Federation	25	8.19	200 0	24 25
Yandilla King	5	1.04	23 33	22 39
Gipsy	Stockroad	1.96	44 20	22 37
Aeme	5	0.75	16 46	22 21
Crossbred 53	9b	5.27	115 45	21 58
Dindiloa	5	0.45	9 18	20 40
Marshall's No. 3	5	1.58	28 47	18 13
Federation	8a	0.97	15 55	16 25
Federation	Exp. plots	23.38	736 26	31 30
Federation	Exp. plots	31.89	970 42	30 26

Farm average 157.25 4,657 56 29 37

The average for the season is well above the 13-year period, but, nevertheless, the yield is disappointing considering the growth that was made on the new land, which produced very pinched grain, and yielded from 36bush. 52lbs. down to 22bush. 37lbs.

Wheat Returns, Booborowie, 1912-1924.

Year.	Total Rainfall. In.	"Useful" Rainfall. In.	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
1912	15.50	13.20	180.00	4,645 20	25 48
1913	15.07	10.86	388.75	3,611 53	17 0
1914	9.76	7.79	339.75	990 58	2 55
1915	17.14	15.95	284.28	7,765 2	27 19
1916	22.41	20.28	216.67	7,768 40	35 24
1917	26.78	21.02	153.22	4,984 30	32 32
1918	13.87	11.98	173.81	4,631 32	26 39
1919	18.39	13.77	113.84	3,041 15	26 43
1920	22.22	19.57	91.51	2,937 17	32 5
1921	20.50	15.46	103.10	2,112 32	20 29
1922	20.32	15.61	66.85	1,840 13	27 32
1923	21.17	18.23	107.70	3,392 37	31 30
1924	24.58	19.37	157.25	4,657 56	29 37
Means	19.05	15.62	---	---	25 49

The average yield of 25bush. 49lbs. is quite satisfactory when one takes into consideration that many of the varieties grown are not suitable to the locality.

Yields of Wheat Varieties, Booborowie, 1919-1924.

Variety.	Means 1919-1921. Bush. lbs.	1923. Bush. lbs.	1924. Bush. lbs.	Means 1923-1924. Bush. lbs.
Caliph	30 11	31 25	33 50	32 37
Federation	25 34	33 29	30 38	32 3
Yandilla King	32 32	33 23	30 04	31 43
King's White	—	28 30	33 27	30 58
Onas	29 39	29 28	32 24	30 56
Marshall's No. 3	25 25	29 22	31 12	30 17
Major	35 23	30 49	27 37	29 13
Currawa	—	27 33	28 41	28 7
Queen Fan	26 49	27 7	26 43	26 55
Hard Federation	—	28 51	24 25	26 38
Crossbred 53	22 33	16 29	25 27	20 58
Nabawa	—	—	37 50	—
Nungarin	—	—	37 37	—
Merridin	—	—	37 26	—
Nangeenan	—	—	37 17	—
Dan	—	—	36 52	—
Carrabin	—	—	35 51	—
Geeralying	—	—	31 44	—
Belka	—	—	27 23	—
Gipsy	—	—	22 37	—
Acme	—	—	22 21	—

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PERMANENT EXPERIMENTAL PLOTS.

Instead of placing experimental plots in different fields each year, the policy of permanent plots has been adopted, with the idea of eliminating residual effects of fertilisers.

BARE FALLOW-WHEAT EXPERIMENTS.

Various series of permanent experiments dealing with wheat in bare fallow-wheat rotation, and covering manurial, cultivation, and depth of ploughing tests were decided upon in 1915. The plots carried their first crops in 1916. The plots are so arranged that one-half of each is fallowed every alternate year, the half fallowed one year carrying a crop the following year, and *vice versa*. For the nine years that these plots have been cropped Federation wheat has been used on all plots.

Permanent Manurial Plots, Booborowie, 1916-1924.

Plot.

1. $\frac{1}{2}$ cwt. superphosphate.
2. 1 cwt. superphosphate.
3. 2 cwt. superphosphate.
4. 3 cwt. superphosphate.
5. No manure.
6. 1 cwt. super, $\frac{1}{2}$ cwt. nitrate of soda (spring).
7. 2 cwt. super, $\frac{1}{2}$ cwt. nitrate of soda (spring).
8. 1 cwt. super, $\frac{1}{2}$ cwt. sulphate of ammonia (seeding).
9. 2 cwt. super, $\frac{1}{2}$ cwt. sulphate of ammonia (seeding).
10. 1 cwt. super, $\frac{1}{2}$ cwt. muriate of potash (seeding).
11. 2 cwt. super, $\frac{1}{2}$ cwt. muriate of potash (seeding).
12. 2 cwt. super, $\frac{1}{2}$ cwt. muriate of potash (seeding), $\frac{1}{2}$ cwt. nitrate of soda (spring).
13. 1 cwt. super.
14. No manure.
15. 1 cwt. basic slag.
16. 2 cwt. basic slag.
17. 10 tons farmyard manure.
18. 10 tons farmyard manure and 2 cwt. of super.
19. 10 tons farmyard manure, 2 cwt. of super, $\frac{1}{2}$ cwt. muriate of potash.
20. 2 cwt. super, 4 cwt. gypsum.
21. 2 cwt. super, 5 cwt. lime.
22. 2 cwt. super (half at ploughing).
23. 2 cwt. super (half at ploughing), $\frac{1}{2}$ cwt. nitrate of soda (spring).

75 lbs. of Federation seed used on all plots.

Yield per Acre.														
Plot.	Means												Means	
	1916-1920.		1921.		1922.		1923.		1924.		1916-1924.			
	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.		
1	29	21	11	52	23	25	31	5	30	38	27	5		
2	32	7	13	45	27	34	35	40	30	42	29	48		
3	33	21	19	40	32	29	35	33	29	26	31	33		
4	34	14	18	39	35	11	36	41	31	14	32	33		
5	25	12	5	25	13	11	28	21	25	58	22	6		
6	34	15	18	17	26	45	36	45	37	24	32	16		
7	35	8	19	14	26	2	34	22	32	49	32	1		
8	33	34	17	22	28	45	36	14	35	33	31	45		
9	33	51	21	21	26	25	35	7	34	49	31	53		

*Permanent Manurial Plots, Booborowie, 1916-1924—continued.*Yield per Acre—*continued.*

Plot.	Means				Means				Means			
	1915-1920.		1921.		1922.		1923.		1924.		1915-1924.	
	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.
10	33	0	12	13	26	31	35	31	30	37	29	59
11	33	35	19	26	28	10	33	51	31	38	31	13
12	34	10	19	58	30	42	35	49	34	32	32	25
13	32	56	17	6	28	57	32	7	30	15	30	23
14	25	42	3	9	12	53	28	45	25	44	22	7
15	31	11	21	47	24	30	36	58	28	58	29	47
16	33	29	21	46	24	19	35	52	29	31	30	59
17	31	35	12	5	26	10	37	28	36	7	29	58
18	33	37	21	0	27	37	36	26	36	56	32	14
19	34	21	20	16	27	42	37	10	40	8	33	0
20	32	46	20	29	29	25	31	51	29	9	30	32
21	34	18	19	51	29	52	32	36	32	58	31	52
22	32	13	18	44	27	35	33	15	29	18	29	59
23	33	2	18	0	28	37	34	20	31	57	30	54

These manurial tests with wheat have been conducted continuously for the past nine seasons, and in such a series of seasons and in these particular soil conditions they appear to indicate that:—

1.—A $\frac{1}{2}$ cwt. dressing of superphosphate gives an increase of 4bush. 59lbs. of wheat per acre over and above the yield received from wheat grown without manure.

2.—A dressing of 1cwt. of superphosphate gives an increased yield of 7bush. 59lbs. per acre.

3.—A dressing of 2cwts. superphosphate gives an increase of 9bush. 27lbs. per acre.

4.—A dressing of 3cwts. of superphosphate gives an increase of 10bush. 27lbs. per acre.

5.—A dressing of 1cwt. superphosphate gives an increase of 3bush. over and above that received from a $\frac{1}{2}$ cwt. dressing of superphosphates.

6.—A dressing of 2cwts. of superphosphate gives an increase of 4bush. 28lbs. over a $\frac{1}{2}$ cwt. dressing.

7.—A dressing of 3cwts. of superphosphate gives an increase of 5bush. 28lbs. over a $\frac{1}{2}$ cwt. dressing.

8.—A dressing of 2cwts. superphosphate gives an increase of 1bush. 28lbs. over and above that received from a dressing of 1cwt. superphosphates.

9.—A dressing of 3cwts. superphosphate gives an increase of 2bush. 28lbs. over 1cwt. application.

10.—A dressing of 3cwts. of superphosphate gives an increase of 1bush. over and above that received from a 2cwts. application of superphosphate.

11.—An application of 1cwt. basic slag gives an increase of 7bush. 41lbs. over the no-manure plots.

12.—An application of 2cwts. basic slag gives an increase of 8bush. 53lbs. over the no-manure plots.

13.—A dressing of 2cwts. of basic slag gives an increase of 1 bush. 12lbs. over a 1cwt. application of basic slag.

14.—The addition of $\frac{1}{2}$ cwt. of nitrate of soda to a dressing of 1cwt. of superphosphate gives an increase of 2bush. 11lbs. per acre.

15.—The addition of $\frac{1}{2}$ cwt. of nitrate of soda to a dressing of 2cwts. of superphosphate gives an increase of 28lbs. per acre.

16.—An application of $\frac{1}{2}$ cwt. sulphate of ammonia added to 1cwt. of superphosphate gives an increase of 1 bush. 40lbs.

17.—An application of $\frac{1}{2}$ cwt. of sulphate of ammonia added to a 2cwts. dressing of superphosphate results in an increase of 20lbs. per acre.

18.—A $\frac{1}{2}$ cwt. dressing of muriate of potash in addition to 1cwt. of superphosphate results in a loss of 6lbs. per acre.

19.—A $\frac{1}{2}$ cwt. dressing of muriate of potash in addition to 2cwts. of superphosphate results in a loss of 20lbs. per acre.

20.—The addition of $\frac{1}{2}$ cwt. of muriate of potash and $\frac{1}{2}$ cwt. nitrate of soda to 2cwts. superphosphate gives an increase of 52lbs. per acre. The addition of $\frac{1}{2}$ cwt. muriate of potash gives an increase of 24lbs. over the superphosphate and nitrate of soda. The addition of $\frac{1}{2}$ cwt. nitrate of soda gives an increase of 1bush. 12lbs. over the superphosphate and muriate of potash dressing.

21.—Ten tons of farmyard manure per acre gives an increase of 7bush. 52lbs. of wheat over no-manure, at a minimum cost of £4 for the fertiliser.

22.—Ten tons of farmyard manure and 2cwts. superphosphate per acre gives an increased yield of 41lbs. of wheat more than that received from a dressing of 2cwts. superphosphate alone. The addition of $\frac{1}{2}$ cwt. muriate of potash to 2cwts. superphosphate and 10 tons farmyard manure gives an increase of 1bush. 27lbs. per acre.

23. The addition of 4cwts. of gypsum to the dressing of 2cwts. of superphosphate results in a loss of 1bush. 1lb. of wheat per acre.

24.—The addition of 5cwts. of lime to a dressing of 2cwts. superphosphate results in an increase of 19lbs. per acre, at a minimum extra cost of 8s. for lime.

25.—Putting half of the superphosphate into the land at ploughing time, and at the depth of ploughing, does not give an increase over the method of putting all of the superphosphate in with the seed when 2cwts. of superphosphate is used to the acre.

26.—The addition of $\frac{1}{2}$ cwt. of nitrate of soda to 2cwts. of superphosphate, when half the latter fertiliser is put in the soil at ploughing time, only gives an increase of 55lbs. per acre.

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MONEY VALUE OF INCREASE.

Owing to the varying prices of both grain and fertilisers, it is quite impossible to put a correct value on the increases obtained from the different fertilisers, but if we take the following figures we can compare the results as shown below. In this following table the prices used to arrive at the values of grain increases are:—

	s. d.
Wheat	3 9 per bush.
Superphosphate	5 0 per cwt.
Basic slag	5 0 per cwt.
Nitrate of soda	18 0 per cwt.
Sulphate of ammonia	16 0 per cwt.
Muriate of potash	18 0 per cwt.
Farmyard manure	8 0 per ton.
Gypsum	2 0 per cwt.
Lime	32 0 per ton.

Addition of—	To—	Gives Increase of—	Increase at 3s. 9d. per Bush.	Cost of Extra Outlay.	Profit per Acre.
		B. L.	s. d.	s. d.	s. d.
½cwt. super.	No manure	4 59	18 8	2 6	16 2
1cwt. super.	No manure	7 59	29 11	5 0	24 11
2cwt. super.	No manure	9 27	35 5	10 0	25 5
3cwt. super.	No manure	10 27	39 2	15 0	24 2
½cwt. super.	½cwt. super.	3 0	11 3	2 6	8 9
1½cwt. super.	½cwt. super.	4 28	16 9	7 6	9 3
2½cwt. super.	½cwt. super.	5 28	20 6	12 6	8 0
1cwt. super.	1cwt. super.	1 28	5 6	5 0	0 6
2cwt. super.	1cwt. super.	2 28	9 3	10 0	—
1cwt. super.	2cwt. super.	1 0	3 9	5 0	—
1cwt. basic slag	No manure	7 41	28 10	5 0	23 10
2cwt. basic slag	No manure	8 53	39 9	10 0	29 9
1cwt. basic slag	1cwt. basic slag	1 12	4 6	5 0	Loss
½cwt. nitrate soda	1cwt. super.	2 11	8 2	9 0	Loss
½cwt. nitrate soda	2cwt. super.	0 28	1 9	9 0	Loss
½cwt. sulphate ammonia	1cwt. super.	1 40	6 3	8 0	Loss
½cwt. sulphate ammonia	2cwt. super.	0 20	1 3	8 0	Loss
½cwt. muriate potash	1cwt. super.	*	—	—	—
½cwt. muriate potash	2cwt. super.	†—	—	—	Loss
½cwt. muriate of potash and ½cwt. nitrate soda	2cwt. super.	0 52	3 3	9 0	Loss
½cwt. muriate potash	2cwt. super. and ½cwt. nitrate soda	0 24	1 6	9 0	Loss
½cwt. nitrate soda	2cwt. super. and ½cwt. muriate potash	1 12	4 6	9 0	Loss
10 tons farmyard manure	No manure	7 52	29 6	80 0	Loss
10 tons farmyard manure	2cwt. super.	0 41	2 7	80 0	Loss
½cwt. muriate potash	10 tons farmyard manure and 2cwt. super.	1 27	5 5	9 0	Loss
4cwt. gypsum	2cwt. super.	†—	—	—	Loss
5cwt. lime	2cwt. super.	0 19	1 2	8 0	Loss

* Decrease, 6lbs.

† Decrease, 20lbs.

‡ Decrease, 1bush 1lb.

Permanent Cultivation Plots, Booborowie, 1916-1924.

All plots dressed with 2cwts. superphosphate per acre.

Early Fallow (July)—

Plot.

24. Ploughed 6in., harrowed immediately. Cultivated or harrowed whenever necessary.
25. Ploughed 6in., left untouched during winter. Cultivated or harrowed whenever necessary.
26. Ploughed 6in., rolled immediately. Cultivated or harrowed whenever necessary.
27. Ploughed 6in., skim ploughed after rain. Cultivated or harrowed whenever necessary.

Late fallow (after September 1st)—

28. Ploughed 3in. Cultivated or harrowed whenever necessary; not rolled.
29. Ploughed 6in., rolled same day as ploughed. Cultivated according to requirements.

Autumn Ploughing—

30. Ploughed 4in. at seeding, not fallowed, and immediately rolled.

Permanent Cultivation Plots, Booborowie, 1916-1924.

Yield per Acre.

Plot.	Means 1916-1920.		1921.		1922.		1923.		1924.		Means 1916-1924.	
	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.
24	32	37	19	14	28	25	34	26	29	47	30	33
25	33	47	19	30	30	9	34	0	27	48	31	9
26	30	26	20	40	27	43	34	8	29	28	29	21
27	32	12	19	27	29	34	32	48	29	53	30	18
28	31	3	17	15	22	18	31	0	24	48	27	51
29	31	6	16	34	24	53	29	57	26	0	28	6
30	26	30	9	29	18	45	22	35	11	41	21	40

Permanent Depth of Ploughing Plots, Booborowie, 1916-1924.

All plots dressed with 2cwts. superphosphate per acre.

Plot. Depth of Ploughing.

31. Ploughed 3in. deep.
32. Ploughed 6in. deep.
33. Ploughed 9in. deep.
34. Ploughed 9in. deep. To be then twice ploughed 3in. deep before again ploughed 9in. deep.

Yield per Acre.

Plot.	Means 1916-1920.		1921.		1922.		1923.		1924.		Means 1916-1924.	
	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.
31	31	40	19	56	26	22	31	7	29	31	29	25
32	31	29	21	24	28	44	34	2	31	11	30	18
33	31	15	20	44	27	38	35	45	30	25	30	5
34	30	40	—	—	24	4*	—	—	30	48†	29	38
	—	—	20	44†	—	—	37	24*	—	—	—	—

* 9in. ploughing.

† 3in. ploughing.

The tests, comparing different methods of cultivating land for wheat growing, show that where the same variety of wheat is grown and the same manuring practised at Booborowie, for a series of seasons, such as the past nine:—

1. Bare fallowing the land early or late, and any subsequent method of cultivation, increases the yield above non-fallow to the extent of from 6bush. 11lbs. to 9bush. 29lbs. per acre.

2. The biggest returns are obtained from fallowed land prepared according to the recognised practice of the district, *i.e.*, ploughing early (July), leaving rough throughout the winter, then cultivating or harrowing whenever weeds or a surface crust render it necessary.

3. Harrowing the land immediately after ploughing appears to have a depressing effect to the extent of about 36lbs. per acre in the yield.

4. Rolling immediately after early ploughing (July) appears to have a depressing effect on the yield to the extent of, approximately, 1bush. 48lbs. per acre.

5. Skim ploughing the fallowed land after the first rain does not increase the yield received from ordinary treatment.

6. Land ploughed in July in preparing the bare fallow gives an increase of 2bush. 22lbs. per acre over the yield received from land ploughed in September.

7. September ploughing gives about equal yields whether ploughed shallow (3in.) and not rolled or ploughed deep (6in.) and heavily rolled the same day.

8. The depth to which land is ploughed between 3in. and 9in. has had but little effect on the yields of wheat crops in this locality up till the present.

ROTATION OF CROPS.—EXPERIMENTAL PLOTS.

Several series of permanent experimental plots were planned in 1915, and all of these have been continued since that time. The field chosen for the rotation plots was, fortunately, bare fallowed in 1914, so that the crops and records for these crops commence from that year.

Rotation Plots, Booborowie, 1915-1924.

Plot.	Means 1915-1920.		1921.		1922.		1923.		1924.		Means 1915-1924.	
	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.
SERIES I.—Plots 1 and 2.												
<i>Bare fallow—Wheat (2cwts. super).</i>												
Wheat . . .	27	49	24	0	30	29	32	38	30	41	28	28
SERIES II.—Plots 3 and 4.												
<i>Bare fallow (10 tons farmyard manure)—Sorghum—Wheat (2cwts. super).</i>												
Wheat . . .	29	2	16	37	30	8	28	41	31	36	28	7
SERIES IIIA.—Plots 5 to 7.												
<i>Pasture—Bare fallow—Wheat (no manure).</i>												
Wheat . . .	23	35	16	44	16	56	18	53	23	9	21	44
SERIES IIIB.—Plots 8 to 10.												
<i>Pasture—Bare fallow—Wheat ($\frac{1}{2}$cwt. super).</i>												
Wheat . . .	33	40	23	14	33	18	33	24	33	25	32	32

Rotation Plots, Rooborowie, 1915-1924—continued.

Plot.	Means 1915-1920.		1921.		1922.		1923.		1924.		Means 1915-1924.	
	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.
SERIES IIIC.—Plots 11 to 13.												
<i>Pasture—Bare fallow—Wheat (1cwt. super).</i>												
Wheat . . .	34	25	22	36	38	24	33	1	33	12	33	22
SERIES IIID.—Plots 14 to 16.												
<i>Pasture—Bare fallow—Wheat (2cwts. super).</i>												
Wheat . . .	33	10	23	43	30	43	31	25	36	22	32	7
SERIES IIIE.—Plots 17 to 19.												
<i>Pasture—Bare fallow—Wheat (3cwts. super).</i>												
Wheat . . .	33	1	25	1	34	43	25	34	35	25	31	53
SERIES IVA.—Plots 20 to 22.												
<i>Bare fallow—Wheat (2cwts. super)—Barley (1cwt. super).</i>												
Wheat . . .	34	15	22	22	33	23	29	11	32	9	32	16
Barley . . .	20	13	15	45	29	43	19	3	20	49	20	37
SERIES IVB.—Plots 23 to 25.												
<i>Bare fallow—Wheat (2cwts. super)—Oats (1cwt. super).</i>												
Wheat . . .	35	11	20	27	31	4	39	27	32	10	33	26
Oats . . .	35	11	34	8	38	7	36	28	10	27	33	5
SERIES IVC.—Plots 26 to 28.												
<i>Bare fallow—Wheat (2cwts. super)—Peas (1cwt. super).</i>												
Wheat . . .	34	48	20	41	33	2	39	33	32	15	33	26
SERIES IVD.—Plots 29 to 31.												
<i>Bare fallow—Wheat (2cwts. super)—Rape (1cwt. super).</i>												
Wheat . . .	34	10	21	3	24	57	40	37	30	3	32	10
SERIES V.—Plots 32 to 33.												
<i>Bare fallow—Wheat (2cwts. super).</i>												
Wheat . . .	33	59	24	51	24	16	32	15	25	13	31	3
SERIES VIA.—Plots 34 to 37.												
<i>Pasture—Bare fallow—Wheat (2cwts. super)—Barley (2cwts. super).</i>												
Wheat . . .	34	59	19	57	23	31	33	39	28	14	31	32
Barley . . .	29	42	14	49	32	25	3	17	19	33	24	47
SERIES VIB.—Plots 38 to 41.												
<i>Pasture—Bare fallow—Wheat (2cwts. super)—Oats (2cwts. super).</i>												
Wheat . . .	36	20	22	52	29	50	33	17	36	1	34	0
Oats . . .	33	9	19	21	33	1	36	27	8	31	29	29
SERIES VII.—Plots 42 to 46.												
<i>Bare fallow—Wheat (2cwts. super)—Lucerne—Lucerne—Lucerne.</i>												
Wheat . . .	34	32	22	7	31	48	35	37	36	14	33	18
SERIES VIII.—Plots 47 to 50.												
<i>Bare fallow—Wheat (2cwts. super)—Rye Grass—Rye grass.</i>												
Wheat . . .	30	37	21	7	31	48	32	5	28	36	29	44

Seed Used on Rotation Plots, 1924.

Wheat—Federation	75lbs. per acre.
Barley—Short Head	50lbs. per acre.
Oats—Scotch Grey	80lbs. per acre.
Peas—Early Dun	100lbs. per acre.
Rape—Dwarf Essex	5lbs. per acre.
Lucerne—Hunter River	6lbs. per acre.
Rye Grass—Italian	9½lbs. per acre.
Sorghum—Sudan Grass	6lbs. per acre.

Grazing Crops in Rotation Plots.

Sheep per Acre.							
		Means				Means	
		1917-1920.	1921.	1922.	1923.	1924.	1917-1924.
SERIES II.—							
Sorghum		3.76	3.68	3.17	2.57	1.26	3.22
SERIES IIIA.—							
Pasture after wheat without manure . . .		2.07	3.90	2.23	3.45	1.63	2.44
SERIES IIIB.—							
Pasture after wheat with ½wt. super ..		2.12	4.15	3.42	4.09	2.03	2.77
SERIES IIIC.—							
Pasture after wheat with 1wt. super ..		1.96	5.47	3.42	4.09	2.03	2.86
SERIES IIID.—							
Pasture after wheat with 2cwts. super ..		2.20	5.31	3.65	4.09	2.67	3.06
SERIES IIIE.—							
Pasture after wheat with 3cwts. super ..		2.19	5.77	3.39	3.38	2.24	2.94
SERIES IVC.—							
Peas with 1wt. super		2.82	5.74	2.57	2.85	2.52	3.12
SERIES IVD.—							
Rape with 1wt. super		2.91	2.05	1.52	3.62	2.25	2.64
SERIES VIA.—							
Pasture after barley with 2cwts. super ..		1.70	4.01	3.17	2.31	1.51	2.23
SERIES VIB.—							
Pasture after oats with 2cwts. super ..		2.17	3.96	2.08	3.43	3.38	2.69
SERIES VII.—							
Lucerne sown with wheat and 2cwts. super—							

Sheep per Acre per Year.

		1st Year. Grazing.	2nd Year. Grazing.	3rd Year. Grazing.	Means, Three Years' Period.
1916 crop (Plot 42)		1.49	2.06	1.52	1.69
1917 crop (Plot 46)		1.05	1.28	5.80	2.71
1918 crop (Plot 45)		1.38	4.63	7.57	4.53
1919 crop (Plot 44)		3.09	4.46	3.15	3.57
1920 crop (Plot 43)		6.79	2.61	3.49	4.30
1921 crop (Plot 42)		2.09	3.49	3.34	2.98
1922 crop (Plot 46)		2.00	4.13	—	—
1923 crop (Plot 45)		3.22	—	—	—
Average results		2.64	3.24	4.14	3.27*

* For 21 grazing years.

SERIES VIII.—

Rye grass sown with wheat and
2cwt. super—

	1st Year. Grazing.	2nd Year. Grazing.	Means, Two Years' Period.
1916 crop (Plot 47)	2.20	1.30	1.75
1917 crop (Plot 50)	2.53	2.35	2.44
1918 crop (Plot 49)	1.77	6.29	4.03
1919 crop (Plot 48)	4.85	6.29	5.57
1920 crop (Plot 47)	4.80	3.19	4.00
1921 crop (Plot 50)	2.12	2.69	2.41
1922 crop (Plot 49)	4.20	4.11	4.16
1923 crop (Plot 50)	2.83	—	—
Average results	3.16	3.75	3.43†

† For 15 grazing years.



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COAST DISEASE IN SHEEP.

Both the Stock Department and the Department of Agriculture have had brought under their notice repeatedly the trouble popularly known as "Coasty," or "Coast disease". The Veterinary Staff of the Stock Department have investigated cases of the disease, and as a result they issue the following statement for the guidance of sheep owners whose animals are affected:—

This disease is due to parasitic infestation of the fourth stomach (that organ immediately behind the bible) by stomach wireworms. It may also be found in the same organ in goats and young cattle. The worm is small, the average size ranging from $\frac{1}{2}$ in. to $1\frac{1}{2}$ in. in length and about as thick as an ordinary pin. Owing to its small size, its presence may be overlooked by casual observation, even though present in large numbers in the stomach.

The presence of these worms in the stomach causes disturbance of digestion and resulting malnutrition; moreover, the worm is a blood-sucker, and causes anaemia in infested animals, making them thin and weak.

Lambs and young sheep are more seriously affected than adult sheep, which, provided they are well fed, may show little or no signs of the disease.

The infestation is spread by means of contamination of pastures on which infected sheep are grazing, by eggs which pass out on to it in the sheep's dung pellets. These eggs soon hatch out, and the young larvae get on to the ground, where they may continue to live for a lengthy period (12 to 15 months), waiting to be picked up by the grazing sheep, in whose stomach they soon mature into adult worms. Thus sheep become increasingly infested with these worms, and fresh healthy sheep introduced on to contaminated pastures become infested.

TREATMENT.

Only one of two methods can succeed in eradicating the worms.

(1) Pastures known to be "coasty" should be kept entirely free of sheep and cattle for a continuous period of 12 to 15 months. Horses may be, meantime, depastured thereon, or, better, the ground should be top-dressed and cultivated. At the end of this period, all young worm larvae would have perished through failing to be picked up by their natural host, the sheep.

It would, of course, be necessary to ensure that sheep subsequently put on to these paddocks were "worm-free" sheep. This could be done by dosing them immediately beforehand with 1 per cent. solution of copper sulphate (bluestone) in the manner hereinafter described.

(2) The alternative method of eradicating the worms can be carried out when the sheep are permitted to graze over infected pastures.

Every sheep must be drenched regularly at intervals of four weeks for a period of 12 to 15 months with the 1 per cent. solution of bluestone. Under this method of treatment the sheep are allowed to pick

up the larvae worms off the pastures, and take them into their fourth stomachs. The worms require one month to develop into adult worms and lay eggs, so that by drenching the sheep every four weeks every batch of worms picked up by it is destroyed by the bluestone before the worm can lay eggs to reinfect the pastures. After a period of 12 to 15 months all larvae which have not gained entry into the host's stomach will have perished, and as during this time no eggs will have been scattered about, the paddocks will have become free of wire-worms, as will also the sheep which have been subjected to monthly drenching. Eradication under this method depends for its success on the rigid adherence to the regular "once every four weeks' dosing." Success cannot be attained if less frequent and irregular drenching only is carried out. Less frequent and irregular drenching will, at the most, only succeed in keeping the ravages of the worm in check, while leaving the trouble an ever-present one.

"In-lamb" ewes should not be dosed within three weeks of lambing, and in subsequent dosing of ewes and lambs the ewes should be drenched first and the lambs a fortnight later.

The provision of a good lick always available to the sheep is a wise measure to maintain their health. One could be made up as follows:—Common salt, 50 parts; air-slaked lime, 30 parts; superphosphate, 15 parts; sulphate of iron, 5 parts.

Care must be taken to ensure purity of water supply, and all dams and swampy parts should be fenced off if possible to keep stock out of them. The sheep should be watered from properly constructed troughs which can be kept clean.

DOSING OF SHEEP FOR STOMACH WORMS.

The dose of 1 per cent. solution of copper sulphate (bluestone) is:—Adult sheep (over 12 months), 3ozs.; lambs and hoggets (under 12 months), 1½ozs.

To make the solution, take fresh bluestone (not powdered) dissolve ½lb. in 1gall. of boiling water, and add cold water to make up to 3galls.

Fast the sheep 24 hours before drenching and for 12 hours after drenching withhold food and water.

Drench sheep standing on all four legs. Do not set them down on their haunches.

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ORCHARD NOTES FOR SOUTHERN DISTRICTS FOR JUNE, 1925.

[By C. H. BEAUMONT, Instructor and Inspector.]

Pruning, planting, and ploughing will be the main works for this month, but it is a good thing to have a general clean up in the orchard. On the principle that "Pests prevent profits," it should be our aim to do all in our power to prevent pests. Rubbish, waste fruit, broken limbs, old cases, bags, and bandages about an orchard help pests to carry over, and thus to reinfest the trees and fruit next season; so gather them all together and burn them. Scrape out soft or rotting parts of trees, so that no codlin larvae are left; fill up hollows with lime or cement concrete; nail or bolt together split limbs, and support the mend until it unites again. Clean up the packing and drying sheds. Get ahead with the pruning, leaving all sickly trees until last; put the cuttings together at once and follow with the burner or dray as soon as there are enough cuttings on hand.

Plough early to the trees or vines, leaving the centre furrow open for surface waters.

Planting should be finished as quickly as possible. Young trees planted early develop a better root system than those planted late. If you are replacing old trees, get a load of soil from outside the orchard to start the new tree. Do not plant new weeds with your new trees.

Growers of celery should carefully collect all refuse about the beds and destroy it, bury deeply or burn it; this will help to control the rust.

Strawberry beds should be kept free from weeds and stagnant water.

The cold store will need watching if the best results are to be obtained; mature fruits should be marketed; handle carefully, and quickly return the firmest to the cool room.

It is good to spray citrus trees with "Bordeaux mixture" to prevent "brown rot"; try it. With a wet winter it is bound to come, so insure your crop. Leave a few unsprayed so as to prove the value of your work and material.

Olives will soon be ready; they are well worth handling. Most of the olive oil used in Australia is imported.

For woolly aphis try crude petroleum or the mixed spray tried in Victoria, made by dissolving 1lb. soap in 1gall. water, add 1 gall. red oil and 1 pint "Black Leaf 40"; mix well and dilute to 80galls.; use from now till October. Thoroughness in application is the secret of success.

THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

CONFERENCE OF RIVER BRANCHES.

At the opening session of the Annual Conference of River Murray Branches of the Agricultural Bureau, held at Waikerie on Wednesday evening, May 20th, there was an excellent representation of delegates from the Renmark, Ramco, Moorook, Block "E", Mypolonga, and Waikerie Branches. The Department of Agriculture was represented by Messrs. H. S. Taylor, H. Wicks, A. B. Feuerheerd (members of the Advisory Board of Agriculture), Professor Arthur J. Perkins (Director of Agriculture), Mr. Geo. Quinn (Horticultural Instructor), Mr. C. G. Savage (Deputy Horticultural Instructor and Manager of the Berri Orchard), Mr. E. Leishman (Orchard Instructor and Inspector), and Mr. H. J. Finnis (Secretary of the Advisory Board of Agriculture). Mr. D. Gordon and Mr. A. V. Lyons, B.Sc. (Scientist of the Mildura Research Station), also attended.

Mr. T. Thompson (Chairman of the Waikerie Branch) extended a cordial welcome to the officers of the Department. Mr. H. S. Taylor, Renmark (member of the Advisory Board of Agriculture), in opening the Conference, said that at the Conference held in Waikerie four years ago, he had uttered a warning against the orgy of vine planting then being indulged in on the river settlements. Though at that time prices for fresh grapes and for raisin products were still high, he had failed to discover any ground for supposing that the abnormally high prices resulting from the dislocations caused by the war would continue after the world had returned to normal conditions. There had never been any reason to suppose that there would be much money in the dried fruits' business at parity prices, and he was greatly concerned over the way in which the vine was being planted in the irrigation areas to the neglect of everything else. At that time the irrigation scheme already planned for development on the Murray, in Victoria and South Australia, assuming that planting proceeded on the lines hitherto followed, would have resulted in an area of over 150,000 acres under drying grapes. They were palpably heading for disaster. He had entered a plea then for a greater diversity of planting in the soldier settlement blocks, urging that the further planting of Doradillo and Gordo should be discontinued, that the acreage on each block devoted to sultana or currant should be reduced, and that attention should be paid to the orange and pear, for which the river conditions were particularly suited, and in a lesser degree to the apricot, prune, and Smyrna fig, and growing better wine grapes, especially Shiraz. The slump had hit them sooner and harder than was then anticipated, and there was now no immediate prospect of the development of the immense areas then being set aside and prepared for irrigation purposes.

A DUAL PROBLEM.

They were faced now with the dual problem of making a living from the fruits they were now producing and of shaping future developments on lines that would ensure the establishment of the irrigation areas on a basis of permanent prosperity and allow of their profitable expansion. For the latter purpose, the problem was still one of diversified planting, and, so far as fruit production was concerned, he did not think there was much occasion to depart from the lines suggested four years ago. The immediate problem was to secure a living from the fruit they were growing, and he was happy to be able to feel that prospects in this direction were considerably brighter than they had been during the last two years. The sultana, which in the past they had always regarded as likely to be the one line of dried grape fruits that might yield a profit on export, still gave most promise in that regard. They were now assured of British preference, and it was anticipated that the Canadian preference treaty would be ratified. That should result in very considerably increased returns to the grower, though only experience could show whether the full amount of the preference would be reflected in enhanced returns. In addition to preference, they had secured control of the crop, and it was reasonable to expect savings to be effected in costs of transport and marketing from the operations of the export Control Board.

STRONG GROUNDS FOR HOPE.

Probably, however, the strongest ground for hope was furnished by the prospect of producing a better-class product, or, at least, a product better suited to the requirements of the British market. The way in which growers, as a body, and especially the young and keen returned soldier settlers, had given themselves this year to the improvement of the dried sultana, was most gratifying and encouraging. They were aiming particularly at the production of a brighter colored article, and there was great promise of success in that direction from the two new methods of processing widely adopted during the season just ended. Proved results of great value had followed the adoption of what was known as the "Johnson" method of the hot soda dip, and there was every prospect of success from the Smyrna system of the cold potash dip, though that process was still in the experimental stage as far as Australia was concerned. The three outstanding requirements in the production of high-class dried fruits of a quality to command the best possible price on the world's market were good color, perfect curing, and freedom from insect infestation. They were in a fair way to solving the color problem, and the curing problem had been solved by the "Little" finishing off dehydration, which had been on the market for the first time this season. That would allow any grower, for a slight expenditure, to ensure the perfect drying of his fruit in practically any year, and with no increase on the cost under this system of finishing off in the sun.

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DRIED FRUIT GRUB.

What had hitherto been regarded as the most difficult problem of the three was the preservation of the fruit from the attacks of the dried fruit grub. This year was one of the worst ever experienced with the grub, the moths had been unusually plentiful and active, and they must be prepared for strong complaints from overseas customers on that score. During this season, however, an extremely simple and cheap method of coping with the moth grubs had been tried out experimentally, and on the strength of the results of very exhaustive tests, which would shortly be made public, he felt justified in saying that there were the strongest grounds for belief that they had at last found a very effective remedy for that most serious evil.

DORADILLOS.

With regard to the vexed Doradillo trouble, the outlook was even more hopeful. Here, again, they owed a great deal to political arrangements. There were strong grounds for thinking that the Doradillo growers never need have been reduced to the starvation prices ruling for their grapes if the distilleries had been wise enough to follow the lead set by the Australian Dried Fruits Association. Their problem was essentially the same as that with which for many years the dried fruit growers had been faced, and which, until production too greatly exceeded the Australian demand, had been successfully solved by the simple process of keeping the excess production off the Australian market. There were excellent grounds for believing that this year should see the last of the excessively low prices that had been ruling for grapes. Under the combined influences of the export bounty and British preference, there was every prospect of the development of an export trade in wine that would not only absorb the produce of the vineyards areas already planted on the river, but allow of a considerable increase in the planting of vines for wine and spirit purposes. During the past year, growers had been kept going very largely by means of the Commonwealth grant in the form of an advance on their currants and sultanas, and it was possible that some further assistance would be necessary until the new conditions that were being created and evolved could yield the full results anticipated from them. But in that regard there had been many assurances that statesmen of all parties realised that the potential value of the irrigation areas to the State and nation was far too great to allow of their collapse, and he believed they could confidently count on any further assistance that might be found necessary to put them firmly on their feet. There were certainly no serious grounds for present discouragement, and, if the future was not absolutely rosy, he could sincerely congratulate growers on the greatly improved prospects of their principal industries. He then declared the Conference open.

AUTUMN AND WINTER IRRIGATIONS.

The Horticultural Instructor (Mr. Geo. Quinn), in the course of a short address on this subject, said any justification for the advocacy of watering trees or vines during the autumn or winter must be based

not only on what was directly necessary to promote the physiological processes which were essential to the wellbeing of the plants, but on those other factors which were more surely physical in character and operated to advantage or detriment during that period when deciduous trees and vines were supposed to have completed the year's work. For about 15 years past, tests had been proceeding in the Experimental Orchard at Adelaide and Blackwood to gain sound insight into those factors which made for root development in fruit trees during autumn and winter. Young trees had been planted in huge pots during May, June, and July, and the pots plunged beneath the soil in the open ground to receive moisture from rain or go without just as the season decided. General results showed that with suitable conditions of moisture during the autumn the soil temperature remained sufficiently high to stimulate great root activity for weeks after all the leaves had fallen, and the trees, to all appearances, had gone to rest. The experiments demonstrated that when the soil dried out through the autumn into the winter, the ground temperature fell rapidly, and practically negligible root action was noted after the middle of May. It was partly for the final effort of the deciduous trees and vines to finish their year's work of root and branch that an adequate degree of moisture in the soil should be maintained in the autumn months, and citrus trees which were then carrying fruit to the latest stages of maturity should be supplied with an abundance of water to enable them to realise fully the function of water. Other reasons for autumn watering could be summed up as follows:—A well-moistened soil was not so cold as one only partially damped, and consequently its influence on the atmosphere immediately above it was highly favorable to citrus trees when the air temperature fell to a danger point. A further physical advantage was the fact that scanty rain which fell upon the soil already moistened to a fair depth was encouraged to penetrate quickly and deeply at a time of the year when evaporation was retarded. The application of water to land during the period of dormancy of deciduous trees and vines was a natural procedure. The trees were then at rest, and if the under drainage of the land were reasonably free, no injury would result to the resting plants. Rather, it could be claimed that the resting period was prolonged, and the ripening of roots and branch more effectively consummated. Further, provision was made to meet the requirements of the great forward movement which took place with the rising temperatures of spring. One of the greatest defects of the present system of furrow irrigation was the uneven diffusion of the water through the soil body. That could be largely overcome by applying irrigation water in considerable volumes when the light rainfall had already moistened the first few surface inches of the soil. Another important advantage to be claimed for a deep and widely diffused penetration of moisture when evaporation was weakest was the fact that double the weight of injurious salts could be leached out in a given volume of water passed through the land under such circumstances than were collected by means of the ordinary irrigation of summer. In addition, the deeper those salts were pushed down into the soil in the winter, the longer would it take them to rise when the

full force of summer heat returned. Mr. Quinn also alluded to the drying out of the soil body which was in immediate contact with the roots, to a degree of dryness beyond that of the surface roots themselves, and that more particularly of the smaller ones, with a very thin bark. When that took place there was a probability of the dry soil withdrawing the water of organisation from the cells of the roots themselves by an exosmotic action, thus reversing the natural course by which the soil normally supplied the roots and brought about speedy death to those very vital parts of the general organism. That was a factor which would certainly operate to the detriment of any trees or vines planted out before the first irrigation of early summer was applied.

Mr. A. V. Lyon, B.Sc. (Mildura), said the type of land and climatic conditions were very important points in regard to the question of irrigation. At Mildura they considered the autumn irrigation had three possible uses—first, to nourish the vines after harvest up to leaf burst; second, to put enough water in the soil to cause the buds to burst in the spring; and, thirdly, for the growth of cover crops. If they watered in August, it was customary to run right through until after the crops had set, following which the main summer irrigation was given, then the pre-harvest irrigation, and, finally, after picking, for green manure crops. The main point was to make a decision when the winter irrigation or early spring water should be given, the choice depending mainly on the winter rains that fell.

Mr. W. Waters (Renmark) then read a paper, "Poultry," in which he referred to the importance of sidelines on the block, and the value of poultry in effecting savings in the purchase of eggs and meat for the table. An interesting discussion followed.

DIPPING FRUIT.

Mr. J. Johnson then delivered an address, "Dipping Fruit," in River Murray Branches of the Agricultural Bureau, held at Waikerie last week. Mr. J. Johnson delivered an address, "Dipping Fruit," in which he described a method of dipping fruit which he had practised with a good deal of success. He held that it was not necessary to dip the fruit in a boiling solution, and so crack the berries, but better results were obtained by immersing the fruit in a solution at a temperature of between 190deg. and 196deg. The fruit should not be picked until the grapes reached a test of 13½deg. Beaume. The fruit should be picked direct into the dip tins, in order to save time and minimise injury to the berries. The tins should not be filled to the top, because overfilling produced unequal results. The dip should be prepared in the proportions of 1lb. of caustic soda to 25galls. of water. A thermometer should be suspended in the dip out of the way of tins, and in order to make the temperature easily readable, a thin strand of wire should be bound around the thermometer at the figure required. The tin should be plunged sufficiently deep to guarantee a complete immersion of all the fruit. Caustic soda should be added at the rate of 4oz. after every 40 tins had been processed. The dip should be changed after every 1,000 to 1,200 tins had been treated. It was most important to keep the surface free from scum. A dirty dip was an expensive

dip, and more often than not the solution in such a dip was "dead." It was not necessary to crack the fruit to ensure a good drying. Well-dipped fruit was frequently spoilt by spreading too late after dipping, spreading too densely on trays or rack, clearing too soon from plant, placing too thickly on hessians, and boxing in a moist condition. Finally, it was most important to dry the fruit thoroughly. No considerable gain in weight was made if the fruit was wet, but a considerable loss in returns would be experienced.

COLD POTASH DIP.

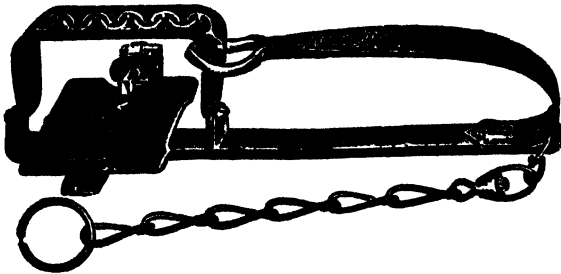
Mr. C. G. Savage (Deputy Horticultural Instructor and Manager of the Berri Orchard), speaking on the subject of treating grapes with cold dipping emulsions for drying purposes, stated that the best sample of dried sultanas was produced by passing the fruit through a lye made from wood ashes, the density of the lye being between 5deg. and 6deg. Beaume. Olive oil was added at the rate of $\frac{1}{2}$ pint to each 25galls. of lye. The fruit was dried upon wooden trays exposed to the sun.

The fruit dried on wooden trays was, on the whole, superior in color to that dried on the racks, and in all trials the highest quality raisins were produced from amber-colored berries, the green fruit giving a raisin somewhat lighter in color. The combination dip made

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partly with wood ashes and partly with carbonate of potash gave superior results to those obtained from a wholly potash emulsion, when the fruit was dried on wooden trays. A small trial with fruit passed through the combined dip and dried on the netting racks did not show to advantage, but the trial was too limited to enable one to draw definite conclusions from it.

The sultana, when treated with an emulsion made up with pearl ash (commercial carbonate of potash) to a Beaume strength of 5.5deg., with olive oil at the rate of $\frac{1}{2}$ pint to each 25galls. of solution, gave a bright golden-colored raisin in good drying weather. When damp or cool weather was experienced, the density of the dip was increased as found necessary up to 7deg. Beaume by the addition of carbonate of potash, the proportion of oil remaining the same.

During cool weather and when rain fell upon the fruit, the berries should be sprayed with a carbonate of potash solution or emulsion, the oil being used when the skin of the fruit appeared to be lacking in oil. All sprayed fruit should be washed when dry to remove the carbonate of potash salt, and redried to evaporate the added moisture. The Gordo and Waltham-Cross varieties needed a much stronger dipping liquid than was found sufficient for the Sultana. In bright, hot weather, 8deg. Beaume would give good results; in cooler weather the density should be increased to 9deg. or even 10deg.

The raisins should not be taken from trays or racks till thoroughly dry. The green coloring matter could be bleached from the more or less shade dried fruit by exposing it to direct sunlight while on the hessians for two or three days. Where the green color persisted, the fruit should be sprayed with similar emulsions as was used when dipping the fruit.

Mr. L. Darrington (Renmark) said with the quick dipping only part of the fruit in the bucket was coated with lye. If a wire basket was used, something about the size of the present dip bucket, it would be a more suitable utensil for dipping. He used a seven-tier rack, but the bottom two tiers dried out darker than those above. Mr. Johnson suggested that the centre rack should be covered with hessian to catch the berries, which otherwise fell from the top tiers right through to the bottom. The present buckets had been used satisfactorily by Mr. Johnson, but he thought they should be made more shallow, to prevent overfilling. Mr. Darrington further stated that he had recently examined some Smyrna fruit, and was very surprised to find it literally alive with grubs and very dark in color. In replying to a question from Mr. F. Carne (Moorook), as to when the side curtains should be let down if the roof did not throw a good shade over the fruit, Mr. Johnson said if the weather was fiercely hot the curtains should be dropped the first day, and at midday it was always advisable to drop the curtain. Mr. H. S. Taylor (Renmark) said the settlers along the river were indebted to Mr. Johnson. The value of his instructional work among the settlers had been inestimable.

HARVESTING AND DRYING SULTANAS AND LEXIAS.

Mr. E. M. Rowe (Waikerie), who read a paper on this subject, said a good dip could be made by building in an ordinary 100gall. tank, so that by taking down one side of the masonry work the tank could be taken out and replaced. The 4ft. rack was most convenient, and did not need a tin roof. Hessian should be set at a slope of 45deg. on either side of the centre over the rack and pinned with nails to keep out summer rains. The racks should be provided with lines and a trolley to keep down dust and facilitate carting to and from the dip. Picking should be done direct into dipping buckets. Pickers should work in pairs, and a tally should be kept on each picker by the driver, and the pickers placed in different rows to encourage competition. The speed of the pickers and the cleanliness of the work depended on the driver. A fast and reliable man should be placed at the dipper. Quick dipping was necessary for a good color. The "runner out" should be a fast man to run the buckets from the dip and spread the fruit correctly. For dipping Sultanas, he recommended a caustic strength of about 1 in 25 at a temperature ranging from 100deg. to 196deg. The buckets should not be more than three-quarters full, in order to dip quickly. The fruit should be carted out, emptied, and spread thinly on the racks. For lexias he recommended testing the dip with a bunch of grapes, holding the grapes in the dip whilst 10 was counted. The dip should be strengthened with caustic soda until the berries cracked freely. The water should be just boiling. When the fruit was ready to come off the racks, hessians should be run down to keep off dust and catch flying berries. Two sheets of galvanized iron, with wire hooks attached, should be obtained and hooked on either side of the rack. Men should be placed on each side, and they should seize and shake the netting vigorously with both hands, so that the berries would fall through easily and quickly. His practice was to shake the bottom tier, take out the fruit, and spread it on the green. Hessian should be run along the bottom tier and the fruit on the other tiers shaken down on to it. The fruit could then be run into the sweat boxes and spread out on the green. Racks should be shaken down in the evening. The fruit then fell easily and one's efforts would be well repaid. Fruit should not be spread on the green more than one berry deep, if it was to dry quickly and retain color. When the fruit was dry it should be turned just after sundown and boxed first thing in the morning.

Mr. F. Carne (Moorook) asked what could be done to save the berries that fell off the rack. Mr. Rowe said a row of trays should be placed under the rack to catch the berries, and they would turn out as good a color as those on the racks. Mr. Swanberry (Moorook) said if picking tins were used for dipping, the dip would become full of sand. Mr. Rowe said four caustic tins could be obtained, the corners of the tins knocked in with a hammer, and these placed flat on the bottom of the dip to catch the sand.

QUESTIONS AND RESOLUTIONS.

Mr. George Quinn (Horticultural Instructor), in reply to a question, said the application of nitrogenous manures to citrus fruits would affect the keeping quality of the fruit, and if the Conference desired, he would be pleased to keep cases of fruit from trees that had been dressed with nitrogenous manures, in order to test the keeping qualities of the fruit.

Mr. F. Harden (Waikerie) moved, and Mr. H. Howell (Waikerie) seconded—"That the Public Library, Adelaide, be requested to establish a reference library dealing with agricultural matters, for circulation by post, as is done in New South Wales." The motion was carried.

Mr. E. Wright (Mypolonga) moved, and Mr. E. Rowe (Waikerie) seconded—"That in the opinion of this Conference, it is desirable that an experimental station should be established on a reclaimed swamp area of the River Murray at the earliest practical opportunity." The motion was carried unanimously.

At the instance of Mr. Ligerwood (Waikerie), seconded by Mr. H. Howell (Waikerie), it was unanimously resolved—"That the Conference consider the advisability of endeavoring to get the Department of Agriculture to appoint a departmental officer to act as a citricultural expert, clothed with the powers to enforce spraying, &c., and generally to assist growers with timely advice."

Mr. J. J. Odgers (Ramco) moved—"That the Conference request the Irrigation Commission to make water rates due on June 1st, instead of April 1st." Mr. Ligerwood seconded, and the motion was carried.

It was decided to accept the invitation of the Lone Gum and Monash Branch to hold the 1926 Conference at Berri.

Mr. L. Darrington (Renmark) moved, and Mr. Pope (Waikerie) seconded—"That pruning competitions be carried out during this year under similar lines to those conducted last year." The motion was carried. On the motion of Mr. L. Darrington (Renmark), seconded by Mr. E. Rowe (Waikerie), it was also decided—"That the Conference request the Pruning Competitions Committee to consider the advisability of arranging junior competitions along the River Murray."

EXPORTING FRESH DORADILLOS.

Mr. O. Weste (Renmark), in reading a paper on the above subject, said in suggesting the shipping of fresh Doradillos to overseas countries he was not advocating a new departure, but practically no shipments had been made since 1914, which was largely due to the increased cost of freight and material. In 1917 a Renmark grower consigned Doradillos to England. The journey took two months, and on arrival it was reported that the fruit opened up in good saleable condition. The Government Produce Department had made a shipment of fresh grapes in 1923, and Doradillos had averaged from 15s. to 1s. 6d. per

case, the Trade Commissioner reporting that the Doradillos had been very badly packed. In order to obtain the best prices, bold fruit should be shipped, and to obtain that a start should be made during pruning. He advocated the careful spacing of spurs to avoid crowding when the crop was maturing. Overcrowding also resulted in uneven berries, and the rubbing of the foliage on the berries destroyed the bloom. Material, freight, &c., cost 8s. when the fruit was packed in granulated cork, and 7s. when packed in wood wool. It was a mistake to pick and pack the same day, because that did not allow the stalk to wilt sufficiently to enable a firm packing to be made, neither did it allow the berries to tighten to the stem. The difficulty in obtaining shipping space had been largely due to individual action combined with the geographical position of the State, but if more shipments were made he had the assurance of the Produce Department that if growers took concerted action, the Department would obtain space for a trial shipment. The Department had given them the lead, and it was up to growers to follow that up. Mr. C. Kerr (Waikerie) said he had made a shipment of Doradillos to London, and his net return had been 1s. 2½d. per case; handling charges, &c., had amounted to 9s. 3d. Mr. George Quinn (Horticultural Instructor) said he did not wish to throw cold water on the proposal outlined in the paper, but unless they obtained better prices than those mentioned, it was not much good trying to ship. If he were going to ship grapes, he would make the Doradillo over to Ohanez. The Ohanez was a tougher variety than the Doradillo and would stand a good deal of rough handling without damage. The cases should be lined with good white paper, to prevent the berries from coming into contact with the rough surface of the timber.

RESEARCH AT MERBEIN.

Mr. A. V. Lyon, B.Sc. (Agric.) (Mildura), delivered an address in which he described the various processes employed in drying vine fruits and detailed the experiments that had been carried out in reference to cold dipping of grapes at the Merbein Research Farm. On the motion of Mr. H. S. Taylor (Renmark), seconded by Mr. F. Harden (Waikerie), it was decided—"That this Conference of River Murray Branches of the Agricultural Bureau of South Australia, while expressing their high appreciation of the contribution made by Mr. A. V. Lyon, B.Sc. (Agric.), to the proceedings of the Conference, and the work being done by Mr. Lyon at the Merbein Research Farm, desires to thank the Federal Minister for making Mr. Lyon's services available for the Conference, and to express the hope that means will be found for continuing and extending the very valuable work of the Research Station in the interests of the Australian Viticultural Industry."

MOUNT GAMBIER HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR APRIL, 1925.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during April.	Per Cow during April.	Per Cow August to April.	Per Herd during April.	Per Cow during April.	Per Cow August to April.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
2/K	25	19-27	9,306	372-24	5,178-75	404-17	16-17	215-52
2/L	21	12-67	5,895	280-71	4,559-75	278-21	13-25	204-70
2/Y	14	11-50	5,910	422-14	6,251-49	237-30	16-95	252-21
2/DD	20-60	15-23	7,856	381-36	6,520-26	314-38	15-26	276-24
2/EE	15	13-70	5,626	375-07	5,849-60	258-25	17-22	259-47
2/FF	10-63	9-50	4,837-5	455-07	7,124-49	206-67	19-44	296-96
2/GG	12	5-53	2,569	214-08	4,584-11	115-31	9-61	191-57
2/HH	9-87	6-53	2,700	273-56	5,998-87	133-36	13-51	240-47
2/II	11	9-97	4,267	387-91	6,062-17	189-72	17-25	262-54
2/JJ	28	16-57	9,921	354-32	3,906-98	383-30	13-69	150-73
Means	16-71	12-05	5,888-75	352-41	5,315-88	252-07	15-08	221-99

RIVER MURRAY HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR MARCH, 1925.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during March.	Per Cow during March.	Per Cow October to March.	Per Herd during March.	Per Cow during March.	Per Cow. October to March.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1/J	15	9-97	7,903-5	526-90	3,312-99	352-56	23-50	140-32
1/L	18	13-77	9,007	500-39	3,246-91	428-20	23-79	140-45
1/M	16-45	14-45	10,363	629-97	3,684-42	622-47	37-84	193-47
1/E	22-48	21-16	13,326	592-79	3,640-75	541-40	24-08	155-82
1/G	24-58	21-32	19,065-5	775-65	4,899-99	877-37	35-69	195-27
1/T	3	1	713	237-67	2,878-24	36-77	12-26	144-84
1/X	19	19	12,756-5	671-39	4,060-62	579-45	30-50	182-48
1/FF	20	14	8,447-5	422-38	3,391-81	391-50	19-58	152-59
1/GG	22	17-26	12,726-5	578-48	3,031-43	586-75	26-67	139-93
1/II	24-71	13-84	11,603	489-56	4,600-78	528-93	21-41	178-61
1/JJ	24-52	14-52	9,621-5	391-96	2,603-51	438-97	17-88	118-33
1/MM	19	7-84	4,669	245-74	1,920-27	212-26	11-17	87-41
1/NN	17	15-35	10,549	620-53	4,514-57	420-67	24-75	180-32
1/OO	18-10	17-16	9,870	545-30	3,762-75	414-05	22-88	169-33
1/PP	24	21-97	16,587	691-12	3,285-52	636-56	26-52	124-49
1/QQ	24	17-03	7,864	357-45	1,114-04	367-96	16-73	51-57
Means	19-49	14-98	10,317-00	529-35	3,431-54	464-74	23-84	150-90

MILANG HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR MARCH, 1925.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during March.	Per Cow during March.	Per Cow May to March.	Per Herd during March.	Per Cow during March.	Per Cow May to March.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
4/A	26	7.74	4,461	171.58	4,184.83	213.91	8.23	184.74
4/B	38	20.48	8,077.5	212.57	4,173.66	372.58	9.80	168.33
4/C	30	23.58	13,844	461.47	4,290.92	623.82	20.79	179.06
4/D	21	5.16	1,439.5	68.55	6,615.48	79.58	3.79	257.02
4/E	21	3.48	1,346.5	64.12	3,772.97	58.57	2.79	146.23
4/F	20	15.94	10,938	546.90	4,438.13	471.22	23.56	192.19
4/G	27	15.94	6,401.5	237.09	4,004.23	300.63	11.13	163.25
4/H	31	19.90	7,496.5	241.82	4,786.16	329.73	10.64	198.94
4/I	32.03	18.90	7,143.5	223.03	4,348.39	338.36	10.56	195.39
4/J	54.23	41.74	16,336.5	301.24	4,784.95	701.29	12.93	184.19
4/K	16	12.90	4,677.5	292.34	4,378.93	226.40	14.15	195.85
4/L	34	25.06	13,157.5	386.99	4,257.32	624.01	18.35	202.42
4/M	21	14.52	4,840.5	230.50	4,088.37	203.00	9.67	164.12
4/N	40	15.42	3,575	89.38	5,587.84	153.58	3.84	228.74
4/O	42.87	10.35	2,323	54.19	5,602.07	113.29	2.64	231.27
4/P	62.97	34.23	6,434.5	102.18	2,668.95	285.10	4.53	104.61
4/Q	50	41.81	23,684	473.68	5,101.47	1,028.64	20.57	205.67
4/R	16	13.84	2,781	173.81	5,259.11	151.46	9.47	245.78
Mean	32.39	18.94	7,719.86	238.31	4,510.31	348.62	10.76	186.74

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NARRUNG HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR MARCH, 1925.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during March.	Per Cow during March.	Per Cow October to March.	Per Herd during March.	Per Cow during March.	Per Cow October to March.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
5/A	78.97	67.23	19,731	249.84	1,930.45	933.37	11.82	91.03
5/B	30	27.32	15,420.5	514.02	3,149.98	717.80	23.93	154.38
5/C	20.52	14.87	7,063.5	344.22	3,401.72	366.51	17.86	160.53
5/D	39.10	26.16	15,231	389.54	1,973.19	707.44	18.09	101.21
5/E	52.16	37.13	16,011.5	306.97	2,595.63	774.44	14.85	122.18
5/F	26	26	13,717.5	527.60	3,706.24	631.08	24.27	164.20
5/G	22.42	14.97	5,284.5	235.71	2,724.73	263.86	11.77	126.93
5/H	40.23	17	6,959.5	172.69	1,619.80	347.76	8.62	86.11
5/I	36	26.03	14,972.5	415.90	2,541.42	679.08	18.86	116.34
5/J	39	25.90	17,117	438.88	2,070.42	758.26	19.44	96.61
5/K	48.87	23.26	16,829	344.36	2,110.09	846.63	17.32	100.26
5/L	34.74	14.32	7,941	228.58	2,148.60	359.99	10.36	99.91
5/M	22.19	10.26	3,404.5	153.42	2,008.49	167.48	7.10	94.69
5/N	32	30.90	11,201	350.03	3,298.56	594.46	18.58	153.25
5/O	40.06	31.52	15,006	374.59	2,625.55	688.40	17.18	116.61
5/P	34	26.19	12,546.5	369.01	2,528.04	592.99	17.44	122.19
5/Q	27	13	6,479	239.96	2,494.25	310.08	11.48	124.43
5/R	80.32	60.52	17,664	219.89	1,707.42	906.07	11.28	80.33
5/S	37	27.77	12,307.5	332.63	1,777.37	548.08	14.81	82.23
Means	38.98	27.39	12,362.37	317.17	2,330.18	588.62	15.10	110.28

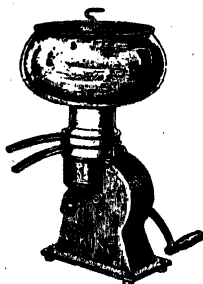
DESTROYING ARTICHOKEs.

To a correspondent at Redhill, who sought information respecting a means of destroying artichokes, the Chief Agricultural Instructor (Mr. W. J. Spafford) wrote:—"It is usually unwise to poison weeds on land that is used to grow crops, because most poisons remain in the soil, rendering it sterile and unfit for the growth of plants at the spots where applied. In the case of the wild artichoke, you can eradicate it by chopping it up with a grubbing axe to a depth of about 9in., or so, then dropping a good-sized handful of common salt or a small handful of sulphate of ammonia on to the freshly-cut crown. Both of these substances only temporarily sterilise the spots where placed in the soil, and are soon distributed by rain throughout the soil."

GLENCOE HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR MARCH, 1925.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during March.	Per Cow during March.	Per Cow October to March.	Per Herd during March.	Per Cow during March.	Per Cow October to March.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
3/A	18-68	16-29	10,259-5	549-22	4,850-76	429-31	22-98	195-14
3/B	13	12-94	5,864-5	451-12	3,087-83	260-12	20-01	129-73
3/C	12	7-94	5,361	446-75	4,349-01	244-92	20-41	170-21
3/D	11-06	9-97	7,020	688-97	4,329-73	276-27	24-98	154-22
3/E	13	12	9,098-5	699-88	4,630-21	398-30	30-64	194-15
3/G	14	12	7,858-5	561-32	3,626-39	308-20	22-01	134-99
3/I	11	9	5,828	529-81	3,994-01	247-84	22-53	162-37
3/J	21	18-35	7,563-5	360-17	3,124-75	392-44	18-69	129-66
3/K	20-16	23-68	15,286	584-33	3,547-20	689-60	26-36	152-28
3/L	22-97	14-77	8,384-5	365-02	2,928-64	343-82	14-97	122-41
3/M	12	10-81	4,781	398-41	3,072-16	212-49	17-71	128-42
3/N	24-13	21-77	13,134	544-30	3,771-33	612-80	25-40	160-24
3/O	16-55	16-55	8,324	502-96	3,551-12	359-96	21-75	142-16
3/P	17	16	7,068	415-76	3,680-81	310-54	18-27	143-74
3/Q	38	33-94	12,014	316-16	3,056-33	552-43	14-54	132-33
3/R	17	14-58	8,979	528-18	4,300-40	405-50	23-85	193-85
3/T	20	19-23	7,330-5	366-53	4,352-07	334-11	16-71	184-26
3/U	24	19-10	8,974-5	373-94	3,245-18	386-16	16-09	131-74
3/V	17	15-84	5,591	328-88	2,985-17	268-17	15-77	123-38
Means	18-34	16-04	8,385-26	457-09	3,653-65	370-16	20-18	150-88



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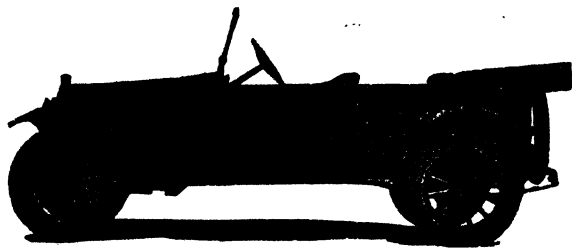
ADVISORY BOARD OF AGRICULTURE.

The monthly meeting of the Advisory Board of Agriculture was held on Tuesday, May 12th, there being present:—Mr. W. S. Kelly (Chairman), Capt. S. A. White, C.M.B.O.U. (Vice-Chairman), Professor A. J. Perkins (Director of Agriculture), Dr. A. E. V. Richardson (Director "Urrbrae" Experimental Station), Hon. W. G. Duncan, M.L.C., Messrs. W. J. Colebatch, B.Sc. (Agric.), M.R.C.V.S. (Principal Roseworthy Agricultural College), P. H. Jones, A. B. Feuerherdt, F. Coleman, J. W. Sandford, H. Wicks, and H. J. Finnis (Secretary Advisory Board of Agriculture).

Apologies were received from Col. Rowell and Messrs. H. S. Taylor, C. A. Loxton, B.V.Sc. (Chief Inspector of Stock), and A. Julius (Conservator of Forests).

Amending Impounding Act.—At the 1924 Conference of Southern Branches of the Agricultural Bureau, it was resolved "That the Impounding Act be amended to give district councils the same power as corporations to deal with and prevent the grazing and straying of stock on roads." Information was received from the Local Government Department that the resolution would be considered when any amendment of the Impounding Act was being dealt with.

Veterinary Surgeons in Country Districts.—Pinnaroo—Messrs. W. S. Kelly, P. H. Jones, W. J. Colebatch, and C. A. Loxton, who were appointed as a committee to inquire into the position of the Veterinary Lodge at Pinnaroo, furnished the following report:—"The Committee appointed to inquire into the position of the Pinnaroo Farmers' Veterinary Club, has investigated the constitution and finances of the organisation, as submitted by Mr. Jones. The club was established by the farmers of the district, on their own initiative, and it is to their credit that they have combined together to secure to the district the services of a trained veterinarian. They are of opinion that this is the type of organisation referred to by the Hon. Minister at the opening of the Minnipa Bureau Conference, when he announced the intention of the Government to help those who were endeavoring to assist themselves. It is apparent that the Pinnaroo Club cannot be continued on the present basis without some financial aid, and we are of opinion that it is very desirable that everything possible should be done to place the movement on a sound financial footing. It is truly co-operative in spirit, and those responsible for its inauguration and maintenance should be encouraged and supported. We, therefore, recommend the Board to request the Hon. Minister to grant such financial assistance as may be necessary to ensure the continuance of the organisation on lines that will be satisfactory to the veterinary officer of the lodge and the farmers of the district." It was decided that the report of the Committee should be adopted and that a request on the lines of the report should be made to the Minister of Agriculture.

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Government Aid to Secure Veterinary Assistance for Eyre Peninsula.—The 1924 Conference of Eyre Peninsula Branches of the Agricultural Bureau carried the following resolution:—"Following the intimation of the Hon. the Minister of Agriculture, to the effect that the Government would consider the granting of monetary aid to farmers on Eyre Peninsula to secure qualified veterinary assistance, this Conference respectfully requests the Hon. the Minister to determine at an early date the conditions under which such aid will be granted." The Minister of Agriculture forwarded to the Board the following report by the Chief Inspector of Stock:—"There is no district on the West Coast where a veterinary practice could be established without some special financial arrangement, on account of the distance between farms, small number of stock, and high cost of conducting a practice under the prevailing conditions. Motor transport is essential, and as the area is sparsely populated, there is always a substantial amount for mileage to be added to the veterinary fee, which, under these circumstances, will often make the cost prohibitive. It has been proposed that the Government should station a departmental officer in the Minnipa district, and recoup themselves by charging fees for veterinary services. I do not consider that this proposition would be advisable and have already reported against it. The establishment of a veterinary guarantee has been tried at Maitland, Yorke Peninsula, where a society of 100 members was formed, each guaranteeing £5. This society guaranteed an annual income to the veterinary surgeon of £500. Clients paid fees and mileage for services rendered, and in the event of the veterinary surgeon's income falling short of £500, the deficiency was to be paid from the guarantee fund. This society remained in existence for about 12 months, when the veterinary surgeon went to another State. The practice is now being carried on without any guarantee. This system, even in a prosperous and well-settled district like Maitland, did not give entire satisfaction, the principal complaint being the high cost of veterinary treatment on account of mileage. I do not consider, therefore, that it could be satisfactorily adopted in any portion of the West Coast. Mr. McKenna, Veterinary Officer of this department, has recently returned from a visit to the West Coast. This officer informs me that a veterinary guarantee is being organised at Minnipa, with the object of obtaining the services of a qualified veterinary surgeon in the district. It is proposed to pay this officer on a salary basis and confine his operations to a radius of 25 miles from Minnipa. I understand that the guarantors will undertake to supply transport. The amount expected to be raised locally is £400. There appears to be a very general impression at Minnipa that the Government would subsidise the fund to the amount of 10s. for every £1 subscribed, and on this assumption it is proposed to pay the veterinary surgeon £600 per annum. Should the Hon. the Minister be prepared to consider a subsidy on such terms (£200 per annum), it would be necessary to provide the amount for a period of, say, three years, as the continuance of the guarantee fund would, undoubtedly, be dependent upon a Government subsidy. I believe that veterinary services could be satisfactorily provided in this manner for the Minnipa district, but similar requests may be made for a Govern-

ment subsidy in other districts on Eyre Peninsula, such as Cummins and Port Lincoln. The veterinary surgeon should be available for duty on behalf of this department in connection with stock diseases, lectures, &c., in proportion to the amount of his salary provided by Government subsidy."

The Minister of Agriculture, to whom the report was submitted, replied as follows:—"I have given this matter very careful consideration, and I agree with the view expressed by the Chief Inspector of Stock in the first portion of the report." On the motion of Mr. P. H. Jones, it was decided "That the Minister of Agriculture be asked whether, in the event of districts overcoming the difficulties that had been mentioned in the report, the Government would then be prepared to assist."

Bovine Tuberculosis.—The Chief Inspector of Stock (Mr. C. A. Loxton), who had been asked to report on the powers which existed in this State providing for the examination of cattle for tuberculosis, and also what methods of inspection and control of dairy farms and milch cows existed in the other States, reported as follows:—"The principal legislative measure for the control of tuberculosis in stock in this State is the Stock Diseases Act. Tuberculosis is a proclaimed disease. Stock owners are required to notify cases of disease to the Chief Inspector of Stock and to the nearest Inspector of Stock. An Inspector of Stock has power to enter at any time upon any land, &c., for the purpose of inspecting stock, and has all other powers and authorities as may be necessary for enabling him to enforce the provisions of the Act and regulations, and may direct the owner of any diseased or infected stock to take such measures as regards their treatment, or to do such other acts as, in the opinion of the Inspector, shall be necessary to eradicate or check the spread of disease. Diseased stock may be destroyed. Quarantine restrictions may be imposed upon diseased stock, which term also includes contacts. The Health Act and Food and Drugs Act provide for the registration of dairies and inspection of dairy cattle. These Acts are administered in the metropolitan area by the Metropolitan County Board. In country districts where the local authority has not made statutory provisions for the licensing of vendors of milk and the registration of dairy premises, this duty devolves upon the Central Board of Health. In the metropolitan area systematic inspections of dairy cattle are conducted by inspectors of the Metropolitan County Board, who report cases of diseased or suspect cattle to this department for action. In addition, independent inspections are made by departmental veterinary officers, and an annual inspection of all dairy cattle on licensed premises is made by veterinary officers of this department in collaboration with the Chief Inspector of the Metropolitan County Board. This department is responsible for inspections at the Metropolitan Dairy Cow Market. In the country districts no systematic inspection of dairy cattle is provided. Country markets are regularly attended by inspectors, and special attention is given to the larger towns and to areas more particularly devoted to dairying, such as Murray Bridge and Mount Gambier. The total number of dairy cattle inspected by the department

for the year ending June 30th, 1924, was 27,024. Ninety cases of tuberculosis were detected and destroyed. In Victoria the registration, inspection, and supervision of dairies, dairy farms, dairy produce, milk stores, milk vessels, dairy cattle, and grazing grounds are provided for by the Dairy Supervision Act. This Act operates in 117 municipal districts (1922), and may be extended by proclamation. It is administered by the Stock and Dairy Supervision Branch of the Department of Agriculture. Dairy supervisors are appointed for each district. This officer makes periodical inspections of all dairies, dairy farms, and dairy cattle in his district. Usually three to five visits are made per annum. He is required to superintend and advise upon stock management, improvements, and cultural operations, &c., in addition to his duties as regard to disease and sanitation. Supervisors are given power to "prohibit," for a period not exceeding two weeks, any cow affected with any notifiable disease, if in his opinion the cow is in such condition that its produce will be deleterious to health or unwholesome. During this period of temporary prohibition, the case is inspected by a veterinary officer, who decides whether the prohibition should be removed, extended, or made permanent. Cows permanently prohibited are branded and may not be used for the production of milk. This Act gives uniform and centralised control of the dairying industry. Section 10 imposes the duty on the supervisor to become personally acquainted as far as possible with every owner of a dairy farm, dairy, or factory, and the conditions of every dairy farm, dairy, or factory in his district, and to confer with and advise such owner in matters connected with his farm animals, premises, utensils, milk, and dairy produce. It is recognised that much of what has been done under this Act has been accomplished by virtue of the personal contact of the dairy supervisor with the dairy farmer. In New South Wales the registration of dairymen, milk vendors, dairy factories, and creameries is provided by the Dairies Supervision Act. This Act is apparently concerned principally in sanitary conditions of dairies, &c. Inspection of cattle is provided under the Stock Diseases Act. Queensland.—The control and supervision of the milk supply, dairies, and the manufacture, sale, and export of dairy produce is provided for by the Dairy Produce Act, administered by the Department of Agriculture and Stock. Western Australia.—The control of dairies throughout the State is in the hands of the Health Department. Health inspectors supervise sanitary conditions, the examination of dairy cattle being carried out for the Health Department by Officers of the Department of Agriculture."

Tractor Trial.—On the motion of Capt. S. A. White, seconded by Mr. A. B. Feuerherdt, it was decided that the Director of Agriculture should be asked to conduct an inquiry into the efficiency and cost of tractors on certain selected farms in this State.

Congress Resolutions, 1924.—The Secretary reported that the resolutions carried at the 1924 Annual Congress referring to the abolishing of Congress, the reduction of the number of Experimental Farms, and the appointment of travelling instructors, had been brought under the notice of the Minister of Agriculture.

Bovine Tuberculosis.—The Petina Branch asked:—"That an inspector be sent to Eyre Peninsula to inspect dairy cattle and test for tuberculosis." It was decided to ask the Chief Inspector of Stock to report on the matter.

Motor Car for Agricultural Instructor.—Correspondence was received from the Petina, Wirrulla, and Maltee Branches, asking the Government to provide a motor car for the use of Mr. R. Hill (Agricultural Instructor). The Secretary was instructed to inform the Branches that the matter had been brought under the notice of the Minister, and that Mr. Hill was allowed to hire a motor as occasion demanded.

Importation of Nico-Dusting Machine.—The Blackwood Branch resolved—"That the Government be requested to import a 'Nico-Dusting' machine for the purpose of testing thoroughly the advantages claimed for the dust method of applying insecticides and fungicides." It was decided to ask for a report from the Horticultural Instructor (Mr. George Quinn).

Horehound.—A communication was received from the Stock Owners' Association, asking the Board's assistance in ascertaining the fullest information as to the desirableness of having the weed known as horehound proclaimed a noxious weed. It was decided that the Secretary should supply the desired information.

Departmental Representative at New South Wales Bureau Conference.—The Secretary reported that Dr. A. E. V. Richardson and Mr. F. Coleman had interviewed the Minister with regard to an officer of the department representing South Australia at the New South Wales Annual Bureau Conference, and that the Minister had approved of the Secretary acting as the South Australian representative.

Interstate Interchange of Departmental Officers.—The Chairman (Mr. W. S. Kelly) reported that he had recently attended conferences that had been held in the north and south districts of New South Wales, where the matter of the interchange of officers of the Departments of Agriculture of the various States had been discussed. He thought that the adoption of the plan would be of great assistance to the department. On the motion of Mr. A. B. Feuerheerdt, seconded by Mr. F. Coleman, it was decided that the Director of Agriculture should be asked to report on the matter.

Life Members.—The names of Messrs. H. C. Pitt, H. and W. Rollbusch, of the Balhannah Branch, were added to the roll of life members of the Agricultural Bureau.

New Members.—The following names were added to the rolls of existing Branches:—Black Springs—G. Avis; Brinkworth—P. Trenowden, G. G. Webber; Cherry Gardens—P. A. H. Wallace, B. N. Wallace; Kapunda—H. Oates, G. Hazel; Kybybolite—E. L. Billinghurst; Mannanarie—G. Sargent, P. O'Loughlin; Parilla—R. G. Plew;

Petina—R. Hayes; Rapid Bay—S. J. Treble, J. Ellbourne; Tweedvale—J. Ramisch, A. P. Noske, H. Pillar; Wynarka—P. Johns; Bay of Shoals—W. T. Turner, J. G. Adams; Alma—A. Jarman, J. L. McKenzie, C. Lockton, R. Baird; Barmera—W. McGillivray; Monarto South—A. R. Strauss; Yacka—A. R. Bierwirth, A. W. Burford, C. Hancocks; Berri—A. H. Tamlin; Rudall—S. Mersieca; Wilkawatt Women's—Mrs. W. Preiss, Mrs. E. W. Brooker; Light's Pass—J. B. Rowe; Yeelanna—W. C. Bryant; Two Wells—S. M. Willcox, H. Williams; Wudinna—P. W. Symonds; Wirrulla—A. H. Puckridge, F. Dunstall; North Bundaleer—J. Mahoney, W. Hodgins; Salisbury—R. S. Woodhead, R. Woodhead, jun., M. Blake; Yadnarie—O. Wegner, L. Dreckow; Lipson—C. McKechnie, M. Barraud, H. L. Calaby; Clarendon—A. A. Harper; Petina—M. Boylan; Marama—J. Watkins; Brinkworth—J. T. Cornish; Light's Pass—L. Francis; Rockwood—L. S. Tune; Keith—Brailey, Sutton, H. Kingston, G. Friebe, W. Parker; Moonta—Wm. Milford.

THE AGRICULTURAL OUTLOOK.

REPORTS FOR THE MONTH OF MAY, 1925.

The following reports on the general Agricultural condition and outlook of the areas represented by the Government Experimental Farms mentioned below have been prepared by the respective managers:—

Kybybolite.—Weather—Dry conditions continued until 10th of the month; since then good rains have fallen, registering over 3in. for the three weeks, which makes it half-inch above the average for May. The total for the year is about half-inch less than the average for the first five months. Some nice warm days were received between rains, and consequently conditions generally have been good for seeding. Crops—Naturally, on account of lateness of opening of season, only small areas are being put under crop. However, the early sown crops have germinated well, and are making good initial growth. Subterranean clover has again germinated really well, and where well supplied with phosphatic fertiliser is making splendid headway. Natural feed—Natural pastures also made good growth during the month, wallaby grass providing really good feed, and top-dressed areas have shown much to advantage.

Turretfield.—Weather—The beginning of the month was fine; rain started falling on the 8th and continued for six days; 2.46 points have been registered for the month. Crops—The early sown crops are well through the ground, but are rather dirty; soursofs are thick in some places and will hinder the growth of cereals. Natural feed—Grass came along nicely after the rain, the weather being on the whole warm, only two heavy frosts being experienced. Stock—Lambing is practically completed. The lambs are in good condition. Deaths have been numerous amongst sheep. Pests—Rabbits are increasing, although many farmers were destroying them. Miscellaneous—Heavy scattered showers have hindered seeding somewhat, but the rain has been very beneficial to feed.

DAIRY AND FARM PRODUCE MARKETS.

A W. Sandford & Co., Limited, reported on Monday, June 1st, 1925:—

BUTTER.—It is pleasing to producers and to the trade generally to see the local supplies of butter gradually increasing as a result of the beneficial rains experienced the last few weeks throughout the dairying districts of this State. Since our last report values have again firmed in sympathy with the higher rates ruling in the eastern States, where heavy quantities are still being bought to fulfil the local requirements. Locally keen demand continues for all grades, buyers operating exceptionally keenly for private separators and dairies, the market being firm at the following quotations:—Choice factory and creamery fresh butter in bulk, 1s. 8½d.; first grade bulk, 1s. 2½d.; second and third grade bulk, 1s. 0½d. to 1s. 1d.; best separators and dairies, 1s. 4d. to 1s. 6½d.; fair quality, 11½d. to 1s. 3½d.; stores and collectors' lines, 11½d. to 1s. 2½d. per lb.

EGGS.—As can only be expected at this time of the year, supplies recorded a further shrinkage, which resulted in the market advancing. Interstate buyers have repeatedly inquired on this market, but with the quantities only being sufficient for local trade, practically no business was done in this direction. Fresh hen, 1s. 11½d.; duck, 2s. 0½d. per dozen.

CHEESE.—During the month under review several South-Eastern factories ceased manufacturing cheese owing to the higher prices ruling for butter, which brought about a shortage of supplies of new makes and the market advanced accordingly. In fact, buyers being unable to procure their requirements in new makes, were forced to purchase lines of semi-matured and matured cheese, of which fairly heavy stocks were offered. However, during last week of the month the factories again concentrated on cheese-making, and supplies have improved considerably, values for new makes being 10d. to 11d. per lb. for large to loaf; semi-matured and matured, 9½d. to 11d. per lb. for large to loaf.

HONEY.—The heavy forwardings of prime quality met with fairly good demand from buyers in the eastern States, especially where the consignments were of liquid condition. Candied lots and the lower grades, however, are slow of sale. Prime clear extracted in liquid condition, 3½d. to 4d.; best quality candied lots, 3d. to 3½d.; lower grades down to 2d.; beeswax, saleable at 1s. 3d. to 1s. 4½d. per lb. according to sample.

ALMONDS.—Good deliveries were made practically daily, and as local buyers operated keenly, all forwardings were readily absorbed, whilst numerous interstate inquiries were also received. Supplies of kernels for some time past have been inadequate, and higher prices rule. Brandis, 9½d. to 9½d.; mixed softshells, 8½d. to 8½d.; hardshells, 4½d.; kernels, 2s. 1½d. to 2s. 2d. per lb.

BACON.—A lowering in values for practically all lines of bacon was brought about with the large quantities imported from the eastern States. At the lower prices the demand was stimulated, and buyers paid most attention to sides and hams. Hutton's "Pineapple" brand, sides, 1s. 1½d. to 1s. 2d.; best factory-cured middles, 1s. 2½d. to 1s. 3d.; Hutton's "Pineapple" rolls, 1s. 1d. to 1s. 1½d.; Hutton's "Pineapple" brand hams, 1s. 7d. per lb. Lard.—Hutton's "Pineapple" brand lard, in packets, 9d.; in bulk, 8d. per lb.

LIVE POULTRY.—Heavy quantities continue to come along to our mart, but with buyers in full attendance and eagerly purchasing, all lines cleared at high rates for prime lots, whilst the medium conditioned birds also realised satisfactory prices. As stocks held in cold store by poulterers, restaurant-keepers, &c., appear to be light, we anticipate that these good rates will rule for some weeks to come. We advise consigning. Crates obtainable on application. The following values ruled at our last auction:—Prime roosters, 4s. 6d. to 7s. each; nice-conditioned cockerels, 3s. to 4s. 3d.; fair-conditioned cockerels, 2s. 6d. to 2s. 11d.; plump hens, 3s. to 4s. 9d.; medium hens, 2s. to 2s. 9d.; couple of pens lower. Geese, 6s. to 6s. 9d.; ducks, good conditioned, 3s. 6d. to 5s. 6d.; do., fair conditioned, 2s. to 3s.; ducklings lower. Turkeys, good to prime condition, 1s. to 1s. 5d. per lb. live weight; turkeys, fair conditioned, 10½d. to 11½d. per lb. live weight; do., fattening sorts lower. Pigeons, 8½d. each.

POTATOES.—Prime quality potatoes at 11s. to 12s. 6d. per cwt. on rail.

ONIONS.—Best brown onions, at 17s. 6d. per cwt on rail.

IMPORTS AND EXPORTS OF FRUITS, PLANTS, ETC., APRIL, 1925.

IMPORTS.

Interstate.

Apples (bushels)	4,978
Bananas (bushels)	21,752
Grapes (bushels)	1
Melons (packages)	2
Mixed fruit (bushels)	2
Passion fruit (bushels)	414
Pears (bushels)	238
Pineapples (bushels)	472
Tomatoes (bushels)	5
Nuts (packages)	2
Carrots (packages)	103
Onions (bags)	1,103
Potatoes (bags)	29,631
Swedes (packages)	111
Bulbs (packages)	40
Plants (packages)	26
Seeds (packages)	47
Wine casks (empty)	3,307

Fumigated—Wine casks, 95.

Rejected—2bush. apples, 54bush. bananas, 1bush. grapes, 2bush. mixed fruits, 12bush. pears, 5bush. tomatoes, 14 bags potatoes, and 2 second-hand cases.

Overseas.

Federal Quarantine Act.

Seeds, &c. (packages)	60,201
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EXPORTS.

Federal Commerce Act.

13,294 packages fresh fruit, 1,150 packages dried fruit, 5 packages jam, and 440 packages honey were exported to overseas markets. These were consigned as follows:—

London.

Apples	12,162
Pears	737
Dried fruit	1,124
Jam	5
Honey	440
Grapes	100

India and East.

Apples	250
Dried fruit	26
Grapes	45

RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of, and to the end of May, 1925, also the average precipitation to the end of May, and the average annual rainfall.

Station.	For May, 1925.	To end May, 1925.	Av. end May.	Av'ge. Annual Rainfall	Station.	For May, 1925.	To end May, 1925.	Av. end May.	Av'ge. Annual Rainfall
FAR NORTH AND UPPER NORTH.					LOWER NORTH—continued.				
Oodnadatta	0.05	1.20	2.40	4.96	Gulnare	2.56	6.33	5.33	19.48
Marree	0.58	3.03	3.48	6.03	Yacka	2.63	6.57	4.68	15.56
Farina	0.86	4.22	2.86	6.66	Koolunga	2.26	5.51	4.87	15.95
Copley	0.89	3.13	3.55	8.35	Snowtown	1.81	4.85	5.01	16.09
Beltna	1.13	4.09	3.72	8.95	Brinkworth	1.90	7.29	4.69	16.39
Blinman	1.75	4.76	4.86	12.51	Blyth	2.64	5.63	5.52	17.07
Tarcoola	0.55	2.05	3.16	7.64	Clare	3.54	7.57	7.60	24.80
Hookina	1.85	3.65	4.38	13.29	Mintaro	2.41	5.77	6.64	23.86
Hawker	1.63	4.05	4.23	12.94	Watervale	3.41	6.47	8.32	27.64
Wilson	1.45	3.45	4.17	12.63	Auburn	2.45	5.31	8.68	24.41
Gordon	1.22	5.07	3.64	11.52	Hoyleton	2.55	4.80	5.74	17.91
Quorn	1.70	3.18	4.58	14.26	Balaklava	2.41	5.12	5.39	15.98
Port Augusta	1.74	3.80	3.75	9.68	Port Wakefield	2.10	3.92	5.00	13.28
Port Augusta West	1.54	3.71	3.41	9.70	Terowie	3.36	8.33	4.41	13.82
Bruce	0.99	2.04	3.50	10.79	Yarcowie	2.23	7.01	4.63	14.19
Hammond	1.59	2.88	4.54	12.02	Hallett	2.37	7.06	4.83	16.53
Wilmington	1.97	3.11	5.89	18.41	Mount Bryan	2.64	5.88	4.70	17.13
Willowie	1.71	3.25	4.12	12.79	Kooringa	2.42	4.44	5.57	18.14
Melrose	3.18	6.66	7.53	23.53	Farrell's Flat	2.67	5.25	5.76	19.09
Booleroo Centre	2.07	4.86	4.96	15.82	WEST OF MURRAY RANGE.				
Port Germein	1.44	2.93	4.65	12.90	Manoora	3.00	5.46	5.63	19.12
Wirrabara	2.49	4.72	6.03	19.85	Saddleworth	2.90	5.37	6.42	19.89
Appila	1.87	4.34	4.95	15.05	Marrabel	2.78	4.97	6.05	20.00
Cradock	1.59	4.53	3.87	11.53	Riverton	2.77	4.73	6.63	20.97
Carrieton	1.89	4.02	4.18	12.95	Tarlee	2.14	4.29	5.83	18.18
Johnburg	0.96	3.77	3.63	10.99	Stockport	2.56	5.47	5.24	16.89
Eurelia	1.91	4.40	4.15	13.62	Hamley Bridge	2.51	6.01	5.36	16.82
Orroroo	2.02	3.95	4.72	13.73	Kapunda	2.82	5.54	6.45	20.04
Nackara	1.40	6.69	4.36	11.85	Freeling	2.23	4.82	5.67	18.19
Black Rook	1.74	4.08	4.39	12.83	Greenock	2.30	5.04	6.58	21.93
Uoolta	1.05	3.24	4.03	11.91	Truro	1.99	5.01	6.14	20.43
Peterborough	2.12	5.17	4.58	13.60	Stockwell	2.19	5.67	6.18	20.58
Yongala	2.15	5.85	4.60	14.73	Nuriootpa	1.74	4.88	6.28	21.17
LOWER NORTH-EAST.					Angaston	1.78	5.84	6.75	22.71
Yunta	1.77	4.01	3.50	8.79	Tanunda	1.85	4.43	6.91	22.40
Waukaranga	1.39	3.64	3.20	8.47	Lyndoch	2.19	4.93	6.59	23.41
Mannahill	1.96	4.04	3.40	8.62	Williamstown	2.30	5.94	7.83	27.75
Cockburn	2.17	4.02	3.36	8.29	ADELAIDE PLAINS.				
Broken Hill, N.S.W.	2.49	5.65	3.83	9.99	Owen	2.04	5.66	—	—
LOWER NORTH.					Mallala	2.54	6.42	5.48	16.92
Port Pirie	1.56	3.16	4.82	13.58	Roseworthy	2.38	4.53	5.50	17.59
Port Broughton	1.83	3.53	4.74	14.33	Gawler	2.71	5.12	6.33	19.24
Bute	2.53	5.10	4.92	15.90	Two Wells	1.60	4.58	5.30	16.03
Laura	2.44	5.80	5.60	18.34	Virginia	2.69	5.56	5.71	17.51
Oatowie	2.69	6.10	5.40	17.27	Smithfield	2.40	5.09	5.39	17.62
Jamestown	2.48	6.04	5.39	18.04	Salisbury	2.67	5.23	6.18	18.75
Gladstone	3.22	5.87	5.07	16.42	North Adelaide	3.02	11.94	6.97	22.66
Crystal Brook	2.86	6.04	5.09	16.00	Adelaide	3.07	11.03	6.96	21.18
Georgetown	2.39	5.45	5.88	18.64	Glenelg	4.19	7.55	5.91	18.63
Narridy	1.75	4.20	5.29	16.36	Brighton	2.78	5.26	6.56	21.60
Redhill	2.12	4.68	5.45	17.38	Mitcham	5.21	10.29	7.37	24.54
Spalding	2.51	6.41	5.50	20.24	Glen Osmond	5.43	9.95	7.94	26.34
					Magill	4.03	7.81	8.10	25.81

RAINFALL—continued.

Station.	For May, 1925.	To end May, 1925.	Av. end May.	Av'ge Annual Rainfall
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MOUNT LOFTY RANGES.

Teatree Gully.....	2.16	4.78	7.61	28.32
Stirling West	7.40	13.89	13.54	47.30
Uraidla	6.94	13.56	12.97	44.79
Clarendon	4.14	9.67	10.44	33.29
Morphett Vale ...	3.15	6.78	7.25	23.07
Noarlunga	3.15	6.04	6.47	20.66
Willunga	3.09	8.46	8.17	26.09
Aldinga	2.69	5.62	6.46	20.56
Myponga.....	3.53	7.53	8.32	30.35
Normanville	3.26	6.35	6.62	20.88
Yankalilla	2.68	5.58	7.38	23.69
Mount Pleasant ..	2.59	6.85	7.83	27.62
Birdwood	2.09	5.81	8.23	29.78
Gumeracha	2.16	6.12	8.74	33.69
Millbrook Reservoir	2.53	6.12	10.03	38.63
Tweedvale	3.26	8.52	9.73	36.12
Woodside	4.48	8.64	8.86	32.48
Ambleside	4.71	9.16	9.66	25.23
Nairne	4.84	8.49	8.42	28.63
Mount Barker	3.77	7.85	9.33	31.54
Echunga	3.95	10.01	10.04	33.41
Macclesfield	3.98	10.15	8.86	30.90
Meadows	5.03	10.59	10.63	36.61
Strathalbyn	2.81	7.48	6.20	19.45

MURRAY FLATS AND VALLEY.

Meningie	1.61	5.65	5.96	18.83
Milang	3.41	6.58	5.09	15.47
Langhorne's Creek	3.07	5.84	4.71	14.88
Wellington	2.45	6.14	4.97	14.85
Tailem Bend	3.28	7.95	4.78	14.92
Murray Bridge	3.12	6.72	4.75	13.98
Callington	2.34	5.35	4.99	15.56
Mannum	2.12	6.09	4.21	11.66
Palmer	1.55	5.26	4.56	15.58
Sedan	1.51	5.34	4.07	12.37
Swan Reach	1.75	5.48	3.68	11.05
Blanchetown	0.94	3.52	3.77	10.01
Eudunda	2.54	6.02	5.41	17.53
Sutherland	1.04	4.05	3.32	11.27
Morgan	1.23	6.80	3.20	9.26
Waikerie	1.44	5.27	5.08	9.79
Overland Corner ..	1.38	4.28	3.99	10.15
Loxton	3.06	5.64	4.32	12.36
Renmark	3.01	5.54	3.76	10.98
Monash	2.12	4.26	—	—

WEST OF SPENCER'S GULF.

Eucla.....	3.03	7.99	4.35	9.98
Fowler's Bay	1.82	3.82	4.03	12.14
Penong	1.51	3.06	4.42	12.61
Ceduna	1.64	3.86	2.83	10.25
Smoky Bay	1.91	3.45	3.41	11.16
Petina	2.72	3.66	3.83	13.12
Streaky Bay.....	3.78	5.61	4.48	15.11
Talia	2.80	4.05	3.80	15.36
Port Elliot	4.12	5.78	4.47	16.66
Port Lincoln	3.30	6.41	5.74	19.71
Cummins	3.24	6.32	4.11	18.85
Yeelanna	2.49	4.43	4.24	—
Ungarra	2.65	5.37	4.30	17.35

WEST OF SPENCER'S GULF—continued.

Darke's Peak	1.07	3.37	4.62	16.41
Kimba	0.93	2.89	4.68	15.81
Wudinna	2.03	4.25	—	—
Minnipa	1.31	4.05	4.66	15.32
Tumby	2.29	4.77	4.00	14.62
Carrow	1.84	3.43	4.86	14.31
Arno Bay	2.14	4.27	4.03	13.01
Cleve	2.65	5.34	4.81	—
Cowell	1.70	3.75	4.35	11.57

YORKE PENINSULA

Walleroo	1.88	4.04	5.06	14.19
Kadina	2.25	4.31	5.45	16.08
Moonta	1.65	3.56	5.40	15.38
Green's Plains	2.36	4.11	5.03	15.97
Maitland	2.64	4.99	6.45	20.31
Ardrossan	1.86	3.53	4.66	14.25
Port Victoria	2.26	3.89	5.14	15.62
Curramulka	2.09	4.05	5.50	18.31
Minlaton	2.49	4.40	5.52	18.06
Brentwood	1.98	3.70	4.79	16.02
Stansbury	2.08	3.71	5.31	17.15
Warooka	2.27	4.22	5.40	17.97
Yorketown	1.84	3.97	5.22	17.35
Edithburgh	2.36	4.34	5.35	16.70

SOUTH AND SOUTH-EAST.

Cape Borda	4.66	8.66	7.20	25.13
Kingscote	4.47	8.59	5.77	19.15
Penneshaw	3.49	6.46	6.17	19.53
Victor Harbor	3.43	6.45	6.71	21.51
Port Elliot	3.28	7.00	6.47	20.17
Goolwa	3.88	8.59	5.93	17.87
Meribah	2.72	5.21	—	—
Alawoona	3.09	5.04	—	—
Mindarie	2.89	5.97	3.00	12.39
Sandalwood	3.68	6.71	4.26	14.98
Karoonda	3.43	7.05	4.66	15.32
Pinnaroo	2.65	6.63	5.12	15.66
Parilla	2.68	6.07	4.30	14.77
Lameroo	3.46	8.73	4.96	16.51
Parrakie	2.55	8.34	4.36	14.83
Geranium	3.57	8.61	4.88	16.83
Peake	3.28	7.55	5.15	16.86
Cooke's Plains	3.31	8.60	4.65	15.31
Coomandook	2.23	7.20	5.20	17.50
Coonalpyn	2.46	7.23	5.24	17.51
Tintinara	2.74	8.27	5.55	18.89
Keith	1.89	4.83	5.44	18.35
Bordertown	2.47	5.96	5.82	19.46
Wolseley	3.11	6.54	5.38	18.31
Frances	3.00	7.10	5.73	19.93
Naracoorte	2.92	5.87	6.61	22.63
Penola	5.99	10.59	7.89	23.10
Lucindale	4.47	7.53	6.54	24.53
Kingston	4.06	7.94	7.30	24.71
Robe	5.24	9.61	7.32	27.14
Beachport.....	5.64	10.75	7.97	29.51
Milliecent	6.18	12.31	7.89	33.25
Kalangadoo	5.56	12.15	8.34	31.25
Mount Gambier ..	5.47	11.51	9.68	36.63

AGRICULTURAL BUREAU REPORTS.

INDEX TO CURRENT ISSUE AND DATES OF MEETINGS.

Branch.	Report on Page	Dates of Meetings		Branch.	Report on Page	Dates of Meetings	
		June	July.			June	July.
Alawoona	•	—	—	Frances	•	27	25
Aldinga	•	3	8	Gawler River	•	8	6
Allandale East	1066	5	3, 31	Georgetown	•	6	4
Alma	1032	9	7	Geranium	•	27	25
Amyton	•	8	6	Gladstone	1028	5	3, 31
Angaston	•	—	—	Glencoe	•	4	9
Appila-Yarrowie	•	—	—	Glossop	•	3	1, 29
Arthurton	•	—	—	Goode	•	10	8
Ashbourne	•	—	—	Green Patch	•	1	6
Balaklava	•	13	11	Gulnare	1031	10	8
Balhannah	1064	5	3	Gumeracha	•	8	6
Barmera	•	1	6	Halidon	†	3	7
Beetaloo Valley	•	—	—	Hartley	•	—	—
Belalie North	•	6	4	Hawker	•	9	7
Berri	•	10	8	Hilltown	•	—	—
Bethel	•	9	7	Hookina	1025	4	2, 30
Big Swamp	•	—	—	Inman Valley	•	—	—
Blackheath	1055	7	3	Ironbank	1055	5	3, 31
Black Springs	1034	—	—	Kadina	•	—	—
Blackwood	1055	9	13	Kalangadoo (Women's)	1056	13	11
Block E	•	—	—	Kalangadoo	1057	13	11
Blyth	1031	6	4	Kangarilla	1056, 1055	—	—
Booleroo Centre	1026	5	3, 31	Kanmantoo	•	6	4
Borrika	•	—	—	Kapunda	•	5	3, 31
Brentwood	•	4	2, 30	Karoonda	•	10	8
Brinkley	1048	6	4	Keith	1060	4	2, 30
Brinkworth	1031	1	6	Ki Ki	•	—	—
Bundaleer Springs	•	—	—	Kilkerran	†	4	2, 30
Bunora	1040	7	6	Kimba	•	—	—
Bute	1036	2	2, 30	Kingston-on-Murray	•	—	—
Butler	†	—	—	Kongorong	1058, 1060	1	6
Calca	•	—	—	Koonibba	•	4	2, 30
Cadell	•	—	—	Koppio	•	1	6
Canowie Belt	•	—	—	Kringin	1048	6	4
Carrow	•	10	1, 29	Kybyholite	•	2	2, 30
Charra	1036	3	1	Lake Wangary	•	6	4
Cherry Gardens	1048	—	—	Lameroo	1042	6	5
Clanfield	•	—	—	Laura	•	6	4
Clare	•	—	—	Leaswood and Forest Range	•	—	—
Clarendon	1055	—	—	Light's Pass	1055	—	—
Claypan Bore	•	8	8	Lipson	1034-5	—	—
Cleve	•	3	1, 29	Lone Gum and Monash	1040	—	—
Cobdogla	•	—	—	Lone Pine	•	3	1, 29
Collie	†	—	—	Longwood	A.M.	—	—
Colton	•	6	—	Lorton	•	—	—
Coomandook	1042	3	1, 29	Lucindale	•	—	—
Coonalpyn	•	5	3	Lyndoch	1035	4	2
Craddock	•	—	—	McLachlan	•	—	—
Crystal Brook	1031	5	3	McLaren Flat	1066	—	—
Cungena	•	1	—	MacGillivray	1055	2, 30	28
Currency Creek	†	5	3	Maitland	•	4	2, 30
Cygnat River	•	2	2, 30	Mallala	†	15	20
Darke's Peak	•	—	—	Maltee	•	5	3, 31
Denial Bay	•	—	—	Mangalo	•	—	—
Edillilie	•	6	4	Mannanarie	1031	4	2, 30
Elbow Hill	†	9	7	Marama	1043	1	6
Eurelia	1026	13	11	Meadows	•	10	5
Farrell's Flat	•	5	3, 31	Milang	•	13	11
Finnis	1048	5	3				

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Branch.	Report on Page	Dates of Meetings		Branch.	Report on Page	Dates of Meetings	
		June	July.			June	July.
Millicent	•	5	3	Rockwood	1056	1	6
Miltalie	1036	6	4	Rosedale	1035	6	—
Mindarie	•	1	6	Rosy Pine	•	—	—
Minlaton	•	5	3, 31	Rudall	1039-40	4	2, 30
Minnipa	•	3	1, 29	Saddleworth	1035	—	—
Monarto South	1043	6	4	Saddleworth (Women's)	1035	9	14
Moonta	1036	5	3, 31	Salisbury	1035	2	7
Moorook	•	8	6	Salt Creek	•	—	—
Morchard	•	6	4	Sandalwood	•	—	—
Morphett Vale	1050	4	9	Shoal Bay	1056	—	—
Mount Barker	•	3	1, 29	Smoky Bay	•	6	4
Mount Bryan	•	—	—	Spalding	•	19	15
Mount Gambier	1058	13	11	Stirling	•	—	—
Mount Hope	1037	6	4	Stockport	1034	4	9
Mount Pleasant	1055	—	—	Streaky Bay	1042	13	11
Mount Remarkable	•	—	—	Strathalbyn	1052	2, 30	28
Mount Schank	•	9	7	Talia	•	13	11
Mundalla	•	4	1, 29	Tantanoola	1060	6	4
Murray Bridge	•	—	—	Taplan	•	2	28
Murraytown	•	—	—	Tarcowie	1029	2, 30	28
Mypolonga	•	1	1, 29	Tarlee	1035	9	7
Myrta	•	6	4	Tatiara	1059	—	—
Nantawarra	†	4	2, 30	Tweedvale	†	4	9
Naracoorte	1058	13	11	Two Wells	1035	—	—
Narridy	•	6	4	Uraidla & Summertown	•	1	6
Narrung	•	13	11	Veitch	•	—	—
Neeta	•	—	—	Virginia	•	3	1
Nelshaby	†	6	4	Waikerie	•	13	11
Netherton	•	3	1, 29	Wall	•	—	—
New Residence	1044	3	1, 29	Wanbi	•	—	—
North Booborowie	•	2, 30	—	Warcowie	1026	2	7
North Bundaleer	•	—	—	Watervale	•	—	—
Nunkeri and Yurgo	•	3	1, 29	Wauraltie	•	2	7
O'Loughlin	•	—	—	Weavers	1036	8	6
Ororoo	1026	—	—	Wepowie	1026	8	6
Owen	•	5	3, 31	Whyte-Yarcowie	•	8	6
Parilla	•	5	3	Williamstown (Women's)	•	3	1
Parilla Well	1044	1	6	Williamstown	•	5	—
Paruna	•	—	—	Willowie	•	3	1, 29
Paskeville	1036	5	3, 31	Wilkawatt (Women's)	1045	—	—
Pata	•	—	—	Wilmington	•	3	1, 29
Penola	•	6	4	Windsor	•	—	—
Penneshaw	1056	8	13	Winkie	•	—	—
Petina	1040	27	25	Wirrabara	1030	—	—
Pinnaroo	•	5	3	Wirrega	•	—	—
Pinnaroo (Women's)	1044	5	3	Wirrilla	•	6	4
Pompoota	•	10	8	Wirrulla	1039	—	15
Poochera	1040	3	1	Wookata	•	—	—
Port Bronghton	•	5	3	Wudinna	1042	—	—
Port Elliot	1056	20	18	Wynarka	1046	—	—
Port Germein	•	13	4	Yacka	1030	2	1, 29
Pygery	1038	6	4	Yadnarie	•	2	1, 29
Ramco	1048	1	6	Yallunda Flat	•	—	—
Rapid Bay	1054	6	4	Yaninee	•	—	—
Redhill	1031	—	—	Yeelanna	1040	6	4
Rendelsham	•	1	6	Yongala Vale	•	—	—
Renmark	•	4	2, 30	Yorke town	•	—	—
Riverton	•	—	—	Youngusband	1047	4	9
Riverton (Women's)	•	—	—				
Roberts and Verran	1038	4	2, 30				

* No report received during the month of May.

† Formal.
a.m. Annual Meeting.

‡ Held over until next month.

THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA

Every producer should be a member of the Agricultural Bureau. A postcard to the Department of Agriculture will bring information as to the name and address of the secretary of the nearest Branch

If the nearest Branch is too far from the reader's home, the opportunity occurs to form a new one. Write to the department for fuller particulars concerning the work of this institution.

REPORTS OF BUREAU MEETINGS.

UPPER-NORTH DISTRICT.

(PETERBOROUGH AND NORTHWARD.)

HOOIKINA (Average annual rainfall, 12in.).

April 9th.—Present; seven members and four visitors.

THE SPARROW PEST.—In reading a short paper on this subject, Mr. P. Murphy said if the sparrow was to be destroyed in numbers, the methods employed had to be varied. If the birds were fed several times with good wheat until they came in large numbers, a great number could be poisoned by laying out wheat treated with strychnine. He also recommended shooting, using an old .22 rifle, and firing shot cartridges. There was very little danger of fire, and not much noise, so that large numbers could be shot about the sheds at a short range. The sparrows so destroyed could be treated with strychnine and used for baits for foxes. It was also advisable to rob all the nests in sheds and gutterings, and, if disturbed continually, they would not become such a pest. A good discussion followed.

HOOIKINA (Average annual rainfall, 12in.).

May 7th.—Present: six members and four visitors.

CARE OF HIDES AND SKINS.—The following paper was read by Mr. J. Murphy:—“Almost every farmer or stockowner markets hides or skins which accumulate either from consumption by the farmer or from losses in stock through sickness or other causes. The preparation for market of hides and skins is worth a little attention, and a few minutes extra work with them will often result in a 30 per cent. increase in value. The prices for wool during the last few years have been high, and consequently the price of sheepskins has risen accordingly, therefore it is advisable that every care should be given the skins in order to obtain top prices. It is necessary when skinning either sheep or cattle to keep the skin free from cuts and to avoid leaving meat or fat on the pelt. Sheepskins should be placed lengthways on a rail to dry, care being taken to see that all the skin is exposed to the air. The skins should be dried in the shade. If left in the sun, they dry too quickly and are liable to crack or tear when being packed. If the skins are not being sent to market for some time, they should be treated with a skin wash to prevent weevils from destroying them. They should be packed carefully, the skin being folded lengthways with the wool on the outside, and then tied with wire. Hides should be left for a few hours to cool and then salted. This can be done by spreading the hide on the ground with the flesh side up, and then sprinkling salt over it, taking care that the salt is well rubbed around the edges. It should then be rolled up and sent to market as soon as possible.” In the discussion that followed, Mr. J. Dunn recommended one part kerosine, one part petrol, and two parts Stockholm tar as a wash for sheepskins.

ORROROO (Average annual rainfall, 13.42in.).

April 18th.

In the course of a discussion on the subject, "The Fox Pest," Mr. G. Graham thought the introduction of legislation making it obligatory on landholders to kill the pest would be hard on landowners with good water on their properties, because foxes travelled considerable distances to water. Mr. T. Tapscott spoke of foxes having taken fowls from the outskirts of Orroroo. Mr. L. R. Cottrill condemned the fox, not only because it killed lambs and poultry, but because it carried the seeds of boxthorn. The Hon. Secretary (Mr. S. Wakeford) held that foxes could be kept under better control in more settled areas if ewes and lambs were yarded at night and by keeping fowls in good yards.

EURELIA, April 8th.—A lengthy discussion on the fox and eagle pests was the subject chosen for consideration. All members agreed to set poison at once for the destruction of foxes before the lambing season commenced. Several methods of laying baits were discussed.

WARCOWIE, April 7th.—Ten members and 25 visitors attended the April meeting, which took the form of a social evening. Mr. T. Ryan delivered an address, after which songs and recitations were rendered. The social concluded with dancing and supper.

WEPOWIE, April 15th.—Members considered the subject "Destruction of Foxes." It was agreed that all landholders should be asked to destroy the vermin without being compelled to do so by law.

WEPOWIE, May 11th.—Several subjects of local interest were discussed, and consideration was given to questions to be submitted at the annual Conference of Upper North Branches to be held at Wilmington on July 15th.

MIDDLE-NORTH DISTRICT.

'PETERBOROUGH TO FARRELL'S FLAT.)

BOOLEROO CENTRE (Average annual rainfall, 15.83in.).

May 8th.—Present: 15 members and three visitors.

SEEDING.—Mr. M. J. Carey, who read a paper dealing with this subject, said in their district practically the only land sown with wheat was fallow, and it should be the aim of the farmer to have the fallow well worked and free from weeds. His experience was that it did not matter if the wheat was pickled some weeks before it was sown, providing bluestone was used. All implements and harness used in connection with seeding operations should be in good order. Care should be given to the horses. The horses should be well fed, and not left in the paddocks and then be expected to start at hard work. It was better to wait for a good rain before commencing seeding, even if one had to wait until the 1st of May before starting. For dry sowing he favored shallow drilling, and where the ground was rough and lumpy it was advisable to use the roller in front of the drill. When the soil was wet the grain should be sown at least 2in. deep. In all cases it was advisable to place the grain on a solid bottom, to the depth the land had been worked by the cultivator. For dry sowing, it was a good plan to put the harrows over the land after a fall of rain. He had harrowed a crop three weeks after it had germinated, and the working had benefited the crop in that it did not injure the wheat plant, but killed a lot of weeds such as dandelion and mustard. The time had arrived when double the quantity of super that was used 10 years ago could be applied. For their district, he recommended mid-season wheats. Mr. Carey then referred to a number of experiments that had been conducted at Longerenong Agricultural College, Victoria. In the discussion that followed, Mr. C. Llewellyn thought harrowing after wheat was sown was beneficial, even if it were done after the wheat was up. He also favored heavier dressings of super. Mr. H. Stephens favored up to 80lbs. of seed per acre, and heavy dressings of super. Mr. H. Michael, referring to the conservation of moisture, thought it better not to have the fallow too fine during summer.

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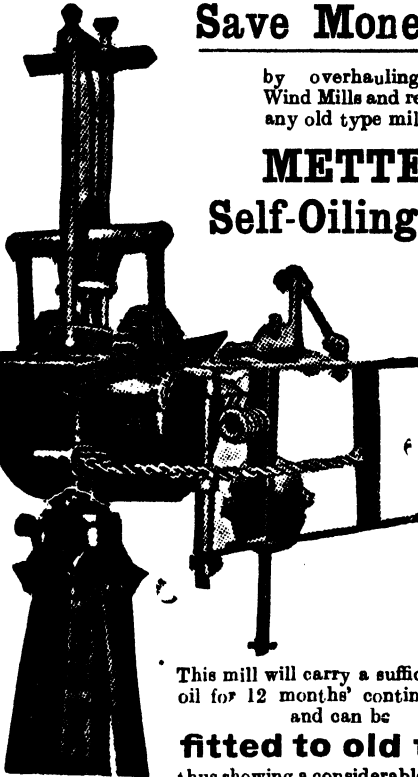
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GLADSTONE (Average annual rainfall, 16in.).

April 3rd.—Present: seven members.

HOW TO MAKE FARMING PAY.—In the course of a paper dealing with this subject, Mr. J. H. Sargent said during seeding operations all summer weeds should be removed from the land, and the seed selected and cleaned ready for pickling. It was not advisable to pickle too much wheat at once, because if grain was pickled too far ahead of sowing, germination would be affected. Before starting seeding, all implements should be overhauled and placed in proper working order. After the first good rain seeding should be pushed ahead with all possible dispatch. Fallowing should be commenced directly seeding was finished, and the work finished by the end of August. So soon as fallowing was finished the land should be harrowed. Every farmer should have a few sheep to keep weeds under control and to assist in packing the soil. Fallows should be cultivated during October in order to kill as many summer weeds as possible. Prior to the commencement of harvesting operations all machinery should be placed in good order. Some early wheats should be sown so that hay cutting could be started early, and thereby provide an opportunity for carting all the hay before reaping started. If possible, a year's supply of hay should be cut. Orders for cornsacks should be made early in the season. Regarding the time of harvesting, he was of the opinion that it was better to reap on the tough side when the weather was unsettled, rather than wait for warmer conditions. It was better to make sure of part of the crop than to lose the whole of it through a storm. He advised farmers to pool the bulk of their wheat so that the price of wheat would be maintained. Pigs were one of the best paying sidelines. The average price for barley was 8s. to 10s. per bag; by feeding it to pigs the grain would be worth £1 per bag. A few fowls of a heavy breed should also be kept. The writer concluded by stating that he strongly recommended every young farmer to join the Agricultural Bureau. "I have been a member between 25 and 30 years," said Mr. Sargent, "and it is through the help that I have received from the Bureau that I am in the position that I am to-day." In the discussion that followed, Mr. R. E. Lines said farmers should grow more fodder crops for feeding sheep. He agreed as to the value of pig raising. They could look to the old country for a bacon market, where bacon was used for breakfast 365 days during the year. Mr. W. Lines said he believed in the growing of fodder crops, for without such side lines it would be difficult to make farming pay. Mr. G. Smallacombe said sheep raising was a subject to which every farmer should give earnest attention. Mr. T. Brown said he had noticed that whilst some years ago the pig market was more or less unstable, of late years it maintained a steady price, which should pay the pig raiser handsomely. He considered pig raising to be one of the best sidelines.

GLADSTONE (Average annual rainfall, 16in.).

May 8th.—Present: 18 members and two visitors.

PREPARING THE SEED BED.—In writing a paper dealing with this subject, Mr. L. Stevens said the preparation of the seed bed should begin at fallowing time. Fallowing should commence as soon after the middle of June as possible; the plough being worked to a depth of about 3in. or 4in. in order to give the cultivator a better chance in the spring, because that implement should not go more than half the depth to which the land was worked with the plough. Fallowing should be completed not later than the middle of August, and harrowed at least once after ploughing was completed. The spring cultivating should be started as soon as possible after September 1st, so that spring weeds could be killed before they became too strong for the cultivator. The early cultivation would also germinate summer weeds, and they could be killed before harvest operations began. The cultivator should be put over the fallow twice before harvest, and kept going right through the hay harvest. After reaping had started the fallow should be kept as clean as possible with sheep, the cultivator not being brought into use until early rains fell. Just before seeding the whole of the fallow should be cultivated to enable the combine to make a good job of drilling. Sheep should be run on the fallow throughout the year, especially during summer. In the discussion that followed, Mr. J. H. Sargent thought that

if fallowing was not commenced before the middle of June, there would scarcely be time to finish by the middle of August. Mr. T. Kerin was not in favor of deep ploughing. The cultivator, he said, should really go deeper than the plough and stir up the subsoil. Mr. R. E. Lines contended that the practice of deep cultivating tended to produce what was locally known as a "hollow bottom." Mr. E. T. Hollitt remarked that no reference was made to harrowing. In his opinion, harrows were to be preferred to the cultivator.

TAROWIE (Average annual rainfall, about 15½ in.).

March 10th.—Present: 11 members.

HARVEST REPORTS AND WHEATS FOR THE DISTRICT.—Mr. W. Ninnies, in the course of a paper under the above heading, said during recent years take-all had appeared to such an extent that the disease could not be treated lightly. The researches of scientists had proved that the disease was a fungus growth living on the stem of the plant, and that the infection was most likely brought about in the soil by ploughing in affected plants. He considered late fallow a factor which assisted the development of take-all, especially if grass and rubbish were ploughed in. Preventive measures were:—Burn the affected stubble, work the fallow well, and keep it clear of weeds, and, if necessary, grow oats on the affected land for a few seasons. Oats were not readily attacked by the fungus, and would help materially in starving the disease out of the land. Smut had been much in evidence in the district during the past season, and from inquiries he had learned that Federation was the variety most affected. Pickling was customary in their district. The method he favored was to dip the grain in a solution of bluestone, 1lb. to 10galls. of water. Seed selection was an important subject, and one which many farmers did not treat seriously. The number of weeds that were becoming numerous in districts, which until recently were free from such, gave the impression that many of them were taken from one district to another in seed wheat. When a change of seed was obtained, it should not be purchased from the farmer who was in the habit of growing turnip, star thistles, drake, barley, and other rubbish in his crop. Regarding the best wheat for the district, he did not think that any variety had stood the test of time better than Federation and perhaps Yandilla King. Personally, he had reaped the best return from Dart's Imperial on nearly every occasion for the last 20 years, but during the past year Leatherhead was the best crop. It was not advisable to sow all the crop with the wheat returning the best averages. A division of late, midseason, and early wheats was an advantage, both at seed time and harvest. Late varieties could be sown early, thus giving them plenty of time to grow well and also to stool, whilst early wheats were very handy should the sowing be delayed, because most of them would develop very rapidly in the growing season. He recommended the following varieties:—Leatherhead, Dart's Imperial, and Caliph. During the late harvest much of the early sown wheat suffered from take-all and black rust or flag smut. Many of the late crops were affected, some slightly, and others to a great extent, with red rust. In some cases it was difficult to dispose of the wheat, and the hay from such crops was of a poor quality. Much of the wheat from the district weighed very well, especially that from the low-lying or flat country, whilst that from the rising or hilly country, in most instances, was very light. In the discussion that followed, Mr. Smith thought rubbish on the fallow the previous year responsible for a fair amount of take-all. A few patches of the fallow on which potato weed was growing were badly affected with take-all. Black rust seemed to be more in evidence on well-worked fallow. Smut had not troubled his crops, and he had grown nearly all Federation, but fresh seed was obtained every few years. Mr. C. A. Kotz was of the opinion that take-all and black rust had become more prevalent in their district during the last few years. Early fallow did not seem to check it, because during the previous fallowing he had finished ploughing by the end of July. Mr. W. H. Thomas said smut could be controlled by careful pickling. Mr. J. Ninnies was of the opinion that a good burn was the best thing to combat take-all and black rust. Currawa was the best wheat grown in that district during the past year.

WIRREBARA (Average annual rainfall, 18.91in.).

May 2nd.—Present: 16 members.

COWS AND PIGS.—Mr. W. H. Stevens, in reading a paper on this subject, said the first point that should be considered was the area of land that could be used for grazing, and the number of hands available for working the property, because it was not reasonable to expect an employee to milk the cows as well as look after and work a team. If there was sufficient land on which feed could be grown, he was of the opinion that it would be desirable to keep either the Holstein or the Milking Shorthorn breed of cattle. Both breeds were good milkers and could be sold to the butcher if the holding became overstocked. The bull calves matured quickly and realised a good price in the market. But, in a district like theirs where the major portion of the farm was devoted to wheat growing, he favored the Jersey or Ayrshire. A desirable food ration for the milking cow was good chaff, bran, and pollard. It was not profitable to keep the Jersey bull calves; they should be killed and one or two pigs purchased to utilise the milk. A stack of hay should be reserved for the cows. The pig was a profitable side line to work in conjunction with dairying, and if fed on milk and pollard or wheat, the animals would be ready for market in about six weeks or two months.

YACKA.

March 5th.—Present: 14 members.

HARVEST REPORTS.—Mr. S. Harvey reported the following wheat yields:—Penny x Canberra, 26bush. 28lbs. per acre; Dart's x Federation, 23bush. 50lbs.; Deacon, 18bush. 40lbs.; Colonel Select 1, 17bush. 40lbs.; Rane, 19bush. 40lbs.; Morac, 18bush. 28lbs.; Federation No. 1, 10bush. 48lbs. Mr. Harvey said that with the exception of the first two crossbreds the grain was rather pinched, and that some of the samples were badly shrivelled. Mr. A. A. Duffield tabled samples of Dookie Beta, Hard Federation, Viceroy, Parsee, and Minister x 217. With the exception of Hard Federation, which Mr. Duffield considered a good wheat for the district, the samples showed the effects of the rusty season. Mr. G. Larwood had on trial Straightbord, Camking, Indian King, Delta, and Amerin. The first-named was the best, yielding a splendid grain, whilst Indian King and Camking (two wheats which were bred at Turretfield) showed good promise, and had strong rust-resisting qualities. Mr. H. R. Tilbrook reported the following yields:—Selected Federation, 27bush. 15lbs. per acre; Standation, 17bush. 30lbs.; Federation x 227, 20bush. 40lbs. The Hon. Secretary (Mr. A. O. Badman) reported that he had 85 varieties on trial in small plots last season, and that several promising varieties of past years had failed to stand up to the test of the rusty season. Nevertheless, good yields had been obtained from some which had resisted red rust. Mr. Badman also had 15 varieties on trial in blocks approximately one-sixth of an acre in size. The following were the results obtained:—Sepoy, 38bush. 27lbs. per acre; Werribee 11, 36bush. 6lbs.; Werribee 19, 36bush. 3lbs.; Yandilla King x Minister, 25bush. 12lbs.; Gallipoli 58/1, 31bush. 47lbs.; Federation x Major (3566), 29bush. 30lbs.; Federation x Major (3545), 28bush. 8lbs.; Minno, 26bush. 52lbs.; Mogul, 26bush. 42lbs.; 552 x 681, 22bush. 40lbs.; Corporal, 19bush. 44lbs.; Senate x Marquis, 19bush. 17lbs.; Colonel No. 2, 19bush. 13lbs.; Federation x Major (5550), 17bush. 20lbs.; Federation x 129, 17bush. 5lbs. The first five gave splendid samples and showed good rust-resisting qualities; the grain of Gallipoli 58/1, and the crossbred Yandilla King x Minister, being perfect and of a good color. The grain of the other 10 varieties was more or less shrivelled.

YACKA.

April 9th.—Present: 14 members and visitors.

POULTRY AS A SIDE LINE ON THE FARM.—Mr. R. Abbott, in reading a paper dealing with this subject, said the White Leghorn was the best breed of poultry for egg production. In the Yacka district hens should be set during September, so that chickens would be hatched during October. Young pullets should be fed and watered regularly, and housed at night in good, clean, well-ventilated houses. The birds required ample room for exercise, and pullets that were allowed free range

would develop rapidly and find a large amount of their food by picking up grubs, insects, seeds, and grit, which, added to grain and greenfeed, made an ideal ration for stimulating early egg production. During summer and autumn two or three mashes each week would prove a good substitute for greenfeed, when the latter was not obtainable. To raise large and strong chickens, hens two or three years old should be mated to a young rooster. The laying hen gave the best results during the first three years of her life; after that she should be fattened and sold for table use. A short discussion followed.

BLYTH, May 2nd.—Mr. W. O. Eime delivered an address, "A Trip Through Western Australia." A number of interesting photos showing various phases of industrial and agricultural life were exhibited by Mr. Eime.

BRINKWORTH, May 4th.—Forty members and 11 visitors attended the May meeting when Professor Arthur J. Perkins (Director of Agriculture) delivered an address, "Wheat Culture."

CRYSTAL BROOK, May 8th.—Mr. A. E. Clarke read an interesting paper, "The Market Value of Red Wheats," in which he said farmers should strive to maintain the high prestige of Australian "white" wheats. He also stressed the importance of keeping up the standard of Australian wheat. Members agreed that nothing was to be gained either in yield or quality by growing red wheats.

GULNARE, May 20th.—A paper dealing with the subject, "Weeds on the Farm," was contributed by Mr. A. G. Thomas, and an instructive discussion followed.

MANNANABIE, May 7th.—The meeting took the form of a "Question Box" evening, when several subjects of local and timely interest were brought forward for discussion.

REDHILL, May 5th.—The Hon. Secretary (Mr. S. A. Pengilly) read a paper, "The Drift of the Rural Population to the Cities," which aroused a keen discussion.

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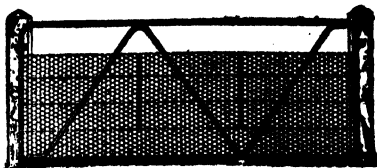


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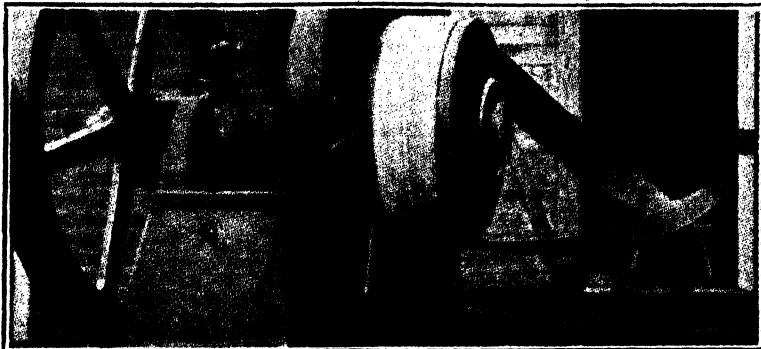
LOWER-NORTH DISTRICT.

ADELAIDE TO FARRELL'S FLAT.)

ALMA.

April 28th.—Present: 15 members.

SEEDING OPERATIONS.—Mr. E. Watts, in reading a paper dealing with this subject said providing the farmer had sufficient plant to be able to do the seeding in a short time, it would pay him to wait for a good soaking rain in May to start all winter weeds, which would be killed during cultivation, and so ensure a clean crop. In addition, it would also ensure a quick germination. Whilst undoubtedly the best crops would be grown by waiting for rain, it was not always convenient to delay seeding, because that meant that sowing would be spread over a long period. If a farmer had a large acreage to put under crop, and had only limited teams and machinery, it would possibly be better to sow portion before the rain, and if rain was late, he would possibly obtain a better return from that which was sown early, than that sown last. In most cases, it was advisable not to sow too deeply, especially when the soil was dry, because there was a danger of the grain malting. Good shares should be worked on the cultivator to ensure cutting all weeds. Five inch shares were the best, because then it was not necessary to go so deeply in order to cut weeds. Harrows should be worked after the drill to cover the seed thoroughly. Harrows also helped to level and pack the soil. Wheat should not be harrowed when it was "just up," because of the danger of breaking the plants. Harrowing did not appear to affect the crop if the work was done when the plants were about 2in. or 3in. high. Rolling when the crop had made a growth of 3in. or 4in. made the plants stool better, and helped to eradicate "take-all." Referring to the application of super, the writer said although 1cwt. of 45 per cent. was often enough for good heavy soil that had been well worked, heavier dressings could be made to advantage on lighter soils. Seventy pounds to 80lbs. of wheat per acre was enough to sow in most cases for a wheat crop. For a hay crop, a bushel of oats and a bushel of wheat sown together made a splendid crop. Oats should be sown at the rate of 14bush. to the acre. If a rain fell before seeding, and started a large number of winter weeds, the fallow should be worked lightly with a springtooth cultivator or scarifier harrows, care being taken not to disturb the seedbed. Pickling could be done before seeding, and would save the trouble of treating the seed at night. Dipping the wheat in a solution of 1lb. bluestone and 1lb. of salt to 10galls. of water would make the crop clean from smut. In the discussion that followed, Mr. A. Smyth considered less than 90lbs. of seed per acre insufficient, and that heavier dressings of super would mean better feed in the year following the crop. Pickling should be done thoroughly, and a supply of pickled seed stored ready for seeding. Mr. A. Harkness agreed that horses should be in good heart for seeding work. It was a mistake to suppose that horses when not being worked in the autumn required no stable feeding. Feed used then was not wasted. In the matter of implements, he had retained the cultivator and drill. Spring tyres were not satisfactory when the soil was sticky, fixed-tyne implements should be used. He had been troubled with smut, especially in White Tuscan until he adopted the practice of adding salt to the bluestone solution. Mr. E. Dresher advised thorough cultivation of the fallow before seeding if an opportunity occurred. He had used a combine for two seasons with good results, but considered that implement not so good as the separate cultivator and drill if weeds became strongly rooted. Ninety pounds of seed and 1cwt. of high-grade super were good rates of sowing. Mr. T. Freebairn advocated the use of the combine. He had used the spring tyne implement, but thought the rigid tyne machine would give better results, because weeds were apt to get under the points of the shares of the former implement and cause the tyres to lift. He intended to use 140lbs. to 150lbs. super per acre. Mr. P. Smyth considered 150lbs. super a good dressing. He strongly advocated the use of scarifier harrows. If the fallow was cross harrowed whilst weeds were young, all weeds would be destroyed. If the fallow was in good order, there would be no necessity for the use of the combined implement. He advised the use of a 1½ per cent. solution of bluestone for pickling. Mr. W. Brown considered that 90lbs. of seed and up to 2cwt. super per acre were not excessive,



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provided the fallow had been well worked. He favored the use of the combine, but thought that implement could be improved by a wider fore carriage to prevent "drifting." It was a mistake to sow the seed deeply.

BLACK SPRINGS.

May 5th.—Present: 16 members.

Mr. A. Mickel read a short paper, "How to Produce Good Stock," in which he expressed the opinion that whilst many owners of stock endeavored to improve the standard of their flocks and herds by the use of the best sires and dams, they did not give the young stock proper care and attention. If green feed was not available at weaning time, provision for supplementary food in the form of hay, chaff, and bran should be made. If there was not sufficient natural pasture he suggested that oats should be sprinkled on the ground, to assist the ewes in nourishing their lambs.

NANTAWARRA (Average annual rainfall, 15.90in.).

April 9th.—Present: eight members.

PREVENTING LOSS OF CROP FROM TREES.—Mr. C. G. Nicholls, in the course of a paper dealing with this subject, said the majority of farmers in the Nantawarra district had a number of their paddocks bordered by growing timber, and some also had clumps of mallee scattered throughout the fields. How many of the farmers fully realise the loss they sustained each year through the encroachment of the roots of the trees into their wheat crops? During a year with an average rainfall the crop could be seen to be affected for at least 2 chains from the headland. Assuming that there was a strip 100 chains long of fairly heavy mallee running along the wheat field, 20 acres of the crop would be affected. In a crop where the remainder of the paddock would yield 20bush. per acre, he was convinced that the crop near the trees would not yield more than 14bush. to the acre, which meant a loss of 120bush. every year. By ploughing a furrow about 9in. deep on the edge of the fallow at fallowing time not more than 2bush per acre would be lost. To prevent such a loss it was a good plan to use an old three or four-furrow plough and put all the draft on to one body. Five good horses could be attached to the plough and driven up and back on the one furrow. That would not take more than half a day, and the time involved would be amply repaid by the amount of extra feed that would be grown in the year following the crop. By ploughing such a furrow and breaking the roots of the mallee, 4bush. of the 6bush. that were now lost annually would be saved. In the discussion that followed, Messrs. A. F. Herbert, R. P. Uppill, L. Burgess, and G. A. Herbert agreed that the time spent in ploughing a deep furrow along the timber would be well repaid. Mr. A. F. Herbert said an old scarifier with one body left on and weighted with a sand bag could also be used for the same purpose.

STOCKPORT (Average annual rainfall, 15.89in.).

April 30th.—Present: 10 members.

COSTS OF PRODUCING HAY AND WHEAT.—This subject was brought forward for discussion, when the following costs were agreed upon:—Producing a crop of hay—Ploughing, 7s. per acre; harrowing, 9d. per acre; cultivating, 2s. 4d. per acre (twice), 4s. 8d.; sowing, cultivating, harrowing, seed, and super, 15s. 1d.; cutting, including twine and stooking, 13s.; total cost, £2 0s. 6d. Producing a wheat crop—Ploughing, harrowing, cultivating, sowing, &c., would cost the same as in the case of the hay crop, but it would be necessary to include reaping and bags, which would cost approximately 14s. per acre, making a total of £2 1s. 6d. to produce a crop of wheat.

LIGHT'S PASS, April 6th.—A paper dealing with the subject, "Farm Out-buildings," was contributed by Mr. B. Boehm. A keen discussion followed, during which Mr. Boehm replied to numerous questions.

LIGHT'S PASS, May 7th.—Mr. B. Scholz read a paper, "The Drift of the Rural Population to the Cities," and a lengthy discussion followed.

LYNDOCH, April 16th.—Mr. S. R. Cockburn delivered an address, "Top Dressing Pasture Lands," before a gathering of 20 members and five visitors.

LYNDOCH, May 7th.—Mr. D. G. Quinn (Viticulturist at the Roseworthy Agricultural College) delivered an address, "Soil Tillage," and replied to numerous questions.

ROSEDALE, April 8th.—On Wednesday, April 8th, members of the Rosedale Branch of the Agricultural Bureau paid a visit of inspection to the Barossa Wineries and Fruit Packing Sheds.

SADDLEWORTH WOMEN'S, April 14.—An interesting and helpful paper, "Home Nursing," was contributed by Mrs. Abbott. A paper, "Qualifications of a Farmer's Wife," from the *Journal of Agriculture*, was read by Mrs. Melville, and an instructive discussion ensued.

SADDLEWORTH, April 7th.—Mr. F. Coleman read an interesting paper, "Wheat." At a further meeting held on May 8th an address, "Top Dressing Pasture Lands," was delivered by Mr. S. R. Cockburn.

SALISBURY, March 3rd (average annual rainfall, 18.57in.).—A programme for the forthcoming half year was arranged. Mr. R. H. Bagster spoke on the subject, "Does the Use of Motors have any Effect on the Hay-growing Industry?" and an interesting discussion followed. A further meeting was held on April 15th, when the following short papers were read and discussed:—Mr. E. V. Harvey, "Rotation of Crops"; Mr. A. Treloar, "The Divining Rod"; Mr T. Judd, "Poultry."

TARLEE, April 14th.—Nineteen members and four visitors attended the April meeting, when Mr. L. Cowan, B.Sc., Agric. (member of the Advisory Board of Agriculture), delivered an address, "Top Dressing Pasture Lands."

TARLEE, May 19th.—Nineteen members and 11 visitors attended the May meeting, when Mr. Geoffrey Samuel, B.Sc. (Plant Pathologist at the Urrbrae Agricultural Research Station), delivered an address illustrated with lantern views, "Fungus Diseases of Plant Life."

TWO WELLS, March 16th.—Mr. S. A. Wasley gave an interesting report of the Conference of Lower North Branches of the Agricultural Bureau. A further meeting was held on April 20th, when Mr. R. S. Cockburn delivered an address, "Top Dressing Pasture Lands."

YORKE PENINSULA DISTRICT.

(TO BUTE.)

KILKERRAN.

May 7th.—Present: nine members.

SEED SELECTION.—Mr. B. Koch, who read a paper on this subject, said in selecting wheat for seed the first point to consider was to secure varieties most suitable for the district. Secondly, the seed should be pure and true to type; and thirdly, it should be free from weed seeds, particular care being taken to avoid grains of Cape barley in the sample that was to be sown. The grain of barley was about the same size as wheat, and the only way to get rid of it was by hand picking. In order to secure a sample free from barley, he suggested about two or three widths of the crop should be hand picked and the seed sown on a special plot. This plot could be reaped for seed the next year, and enough hand picked to sow for seed the following year. Another grave danger which farmers should fight against in the selection of seed was to avoid sowing red wheats, and it was pleasing to note that the Chamber of Commerce had decided to "dock" red wheats. The selection of malting barley for seed was a much easier task than that of wheat, because they only had one variety to deal with in

their district. Here, again, trouble was experienced with Cape barley, and treatment would be the same as that recommended for barley in wheat. Seed oats should be selected with the same care as wheat and barley. Oats sown for hay should be free from Cape barley, otherwise the barley in hay and oats would be spread on the land by stock. Finally, the grain should be thoroughly ripe before it was reaped for seed.

A paper, "The Drift of the Rural Population to the Cities," was then read and discussed. In considering the question, "Cost of Producing an Acre of Wheat," the estimate being based on a seven-bag average per acre, and the land worked with horses, the following costs were arrived at:—Ploughing, 5s.; harrowing three times at 1s. 3s.; cultivating three times at 2s. 6d., 7s. 6d.; seeding, 3s.; reaping, 7s. 6d.; carting, sowing, &c., 4s.; total, 30s. actual working expenses. Seed, 6s. per bushel, 80lbs. per acre, 8s.; super, 1cwt., £5 per ton and handling, 6s.; bags, 12s. dozen, including handling, &c., 7s.; making a total of £2 11s.

BUTE, May 7th.—A paper, "The Drift of the Rural Population to the Cities," was read by the Hon. Secretary (Mr. L. E. Simon), which aroused keen discussion.

MOONTA, May 9th.—Ten members attended the May meeting, which was devoted to a discussion on matters arising from the recent Conference of Yorke Peninsula Branches of the Agricultural Bureau.

PASKEVILLE, May 5th.—The Hon. Secretary (Mr. J. Prouse) read a paper, "The Drift of the Rural Population to the Cities." The subject "Fox Destruction" was also discussed.

WEAVERS, April 20th.—The evening was devoted to a discussion on the subject, "The Fox Pest." Other topics of local interest were also brought before the meeting for consideration.

WESTERN DISTRICT.

CHARRA.

April 8th.—Present: nine members.

BREEDING FARM HORSES.—"I consider the class of horse most suitable for the average farmer to be the Clydesdale mare crossed with the Suffolk-Punch stallion," said Mr. L. Wright, in a short paper dealing with the above subject. That cross, he said, would produce a horse that would be useful in every class of work. It would have a combination of activity and strength, being clean limbed, large framed, and able to adapt itself to fast or heavy work. If Clydesdale stallions were used on Suffolk-Punch mares the result was rarely so good. The Suffolk-Punch mare was smaller, and not nearly so roomy, and the progeny was apt to develop a small frame with heavy, hairy limbs.

MILTALIE (Average annual rainfall, 14.55in.).

April 10th.—Present: eight members.

THE ADVANTAGES OF THE AGRICULTURAL BUREAU.—The monthly meeting was held at the residence of Mr. J. P. Story. In the course of a paper dealing with the above subject, Mr. D. P. Bagnell said at the present time there was a most urgent call for greater production from the soil, and every farmer should accept the privilege of becoming an active member of the Agricultural Bureau. The young men were afforded an excellent opportunity of educating themselves, not only in public speaking and the conduct of meetings, but they also received the full benefit of scientific methods of every phase of agriculture. The knowledge attained at Branch meetings and from the *Journal of Agriculture* could be furthered by attendance at the Winter School of Instruction at Roseworthy Agricultural College. Much credit was due to that institution in advancing scientific methods of agriculture. A farmer on commencing active operations need not necessarily incur any outlay in experimenting, for by following carefully the results of experiments in the *Journal* he would be able to find out the best way to treat the soil under his care.

Being a member of the Agricultural Bureau carried responsibilities as well as privileges. Members should be alive to the fact that the success of a Branch of the Bureau rested on the activity of its members. They should be observant, report uncommon occurrences in farming, and write articles and papers that would have beneficial results. Members were also able to obtain the advice and help of the expert officers of the Department of Agriculture in solving difficult problems. In the discussion that followed, Mr. W. G. Smith mentioned several points that had been revealed to him through being a member of the Bureau. He thought the Winter School was a great advantage, for besides being a good holiday and rest, it was a great help to those who attended. Mr. A. C. Parish considered the Agricultural Bureau an excellent means of improving the education of the man on the land, and if people had a knowledge of the nature of the meetings, more farmers would become members. Mr. J. S. Jacobs said the Bureau had been a great benefit to him. He referred to resolutions that the Branch had carried, and the good work that was being done by crop-growing competitions.

MOUNT HOPE.

April 4th.—Present: eight members.

HANDFEEDING SHEEP.—Mr. R. L. Myers, in the course of a paper dealing with this subject, said there was a considerable area of country in Australia that was too wet for wheat growing, but such districts were suitable for growing oats and barley. Good prices for both of the lastnamed cereals could not be relied upon, and whilst good profits were to be made from sheep and wool, the farmer should consider whether it would pay to grow crops and hand feed them to sheep. Providing the work was carried out systematically and economically, he had no hesitation in recommending handfeeding. He had handfed on a small scale for some years, and was satisfied that the farmer would be well repaid for the money and the labor involved. His

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plan was to commence feeding before the sheep started to fall away. When the stubble paddocks were nearly eaten out, say about the beginning of April, he would bring the stock to artificial feed gradually by putting out feeders and giving the sheep a little oat chaff daily. The ration could be gradually increased until the flock was receiving about 1 lb. per sheep per day. That, with the roughage that could be picked up in the paddocks, was sufficient to keep the sheep in strong condition. Oaten chaff was a good and well-balanced feed, but it should be cut fine, otherwise the sheep would sort out all the coarse chaff and leave it. Whilst the sheep were being fed they should have access to plenty of water, and also a salt lick. The advantages of handfeeding were that sheep became very quiet, and quiet sheep always did better. The blowfly pest was easily combated, because the sheep were always under observation. A far better lambing would result, because the ewes would be in good condition, quiet, and close at hand. Oats and barley could be turned to the most profit by feeding them to sheep.

PYGERY.

April 4th.

FALLOWING.—Mr. G. Symonds, who read a short paper dealing with this subject, said fallowing should be started early in June and finished before the end of August, but before the work was commenced the land intended for fallowing should have a fire run over it. He favored a five-furrowed or six-furrowed mould board plough. The land should be worked to a depth of 2½ in. to 3 in. After the land had been ploughed, all stumps should be picked off, so that the harrows or skim plough could be used to the best advantage. The second working should be done with a skim plough one month or six weeks after ploughing. Harrows should be kept working as much as possible. One hundred acres of well-worked fallow were more profitable than 150 acres of stubble land put in at seeding time.

ROBERTS AND VERRAN.

April 9th.—Present: eight members.

PREPARATIONS FOR SEEDING.—In the course of a short paper dealing with this subject, Mr. C. Masters said first consideration should be given to the selection of seed, special attention being given to that most suitable for the district. Selection of seed wheat meant, as a rule, the choosing of one single head from one particular variety and gradually working up a type of wheat, but such a practice could not be recommended to the average farmer. For local conditions, the speaker thought Gluyas and Federation the best wheats. Grading was the best method of cleaning the seed, because foreign grains could be removed. If a liberal quantity of seed was kept in reserve it could be graded fairly heavily. The farmer would thereby secure plenty of poultry and pig feed, and obtain a first class sample for sowing. Various devices could be obtained for pickling, but he favored the machine in which the wheat was poured in a copper bucket in the bluestone water, the wheat being drained for a few minutes before being put into the bags. Wheat should be pickled about 24 hours before sowing. Seed treated with a 2 per cent. bluestone solution should give excellent results. Every precaution should be taken to clean the drills out thoroughly to prevent varieties from becoming mixed. In the discussion that followed, Mr. C. Masters said he dipped seed in bags with good results. He recommended the use of a pickling solution which did not retard germination. He warned farmers against returning seed to bags which had contained smutty wheat. Mr. S. Jonas agreed with writer *re* Federation and Gluyas wheat for the district. He favored dipping seed when pickling. Mr. H. Lewis agreed that all seed should be graded. Mr. M. Masters considered grading necessary to ensure a uniform crop. With graded seed a better and more even crop was assured. Mr. G. Smith held that grading was essential if maximum yields were to be returned. Mr. B. Evans thought that a 1 per cent. solution of bluestone was quite strong enough for pickling. In reply Mr. Masters recommended shooting the pickled wheat into super bags, thus avoiding any possibility of the seed coming in contact with

smut spores after it had been pickled. He did not think a 2 per cent. solution too strong. He had had trouble with smut after using a 1 per cent. solution.

RUDALL.

May 7th.—Present: eight members.

POULTRY ON THE FARM.—The Hon. Secretary (Mr. H. Jericho) read a paper, in the course of which he stated he had built a fowlhouse on the lines indicated by plan that had been submitted to him by the Government Poultry Expert. He was pleased to say that even though the enclosures were within 100 yards of the other farm buildings, the birds very rarely went near them, because he provided scratching material, and fed the birds in the yards. When let out for a few hours during the day, they looked for greenfeed and worms. He considered poultry as a side line indispensable, and particularly so to the new settler, because wheat screenings and heads would show a fair turnover if fed systematically. The cheapest and most serviceable fowlhouse was one built with galvanized iron. The roosts should be collapsable in order that droppings could be removed easily and vermin kept under control. Cleanliness was one of the main factors in the successful management of the birds. During the autumn he fed a ration of two parts hay chaff, one part crushed wheat, and one part crushed oats, with a little salt and meat meal boiled together for the morning mash, and wheat heads and grain in the evening.

WIRRULLA.

March 18th.—Present: 17 members and six visitors.

The Hon. Secretary (Mr. H. Dolly) read a paper, "Power Farming," and an interesting discussion followed.

SHEEP.—At a further meeting, held on April 15th, a paper dealing with this subject was read by Mr. G. Dunn, in the course of which he said most farmers realised that sheep were necessary towards the profitable working of their farms. Their district labored under a great disadvantage, in that a dog-proof fence had not been erected. To manage sheep successfully the farm should be divided into paddocks of not more than 200 acres in extent, otherwise feed would be wasted. Patches of trees for shelter should be in each paddock. For fencing he recommended five plain wires, well strained, with one barb on the top of the post. For the foundation of the flock he suggested the purchase of four or six tooth ewes, the Merino being the best breed for a farm proposition. A flock of 200 would need four young or six full-mouthed rams. These should be placed with the flock about the middle of December. The flock could be dipped in a 200gall. round tank, or arrangements made to run them through a neighboring dip. Much damage was done by the fly pest, and ewes should be crutched in April. Lambs could be marked when a fortnight old, and as the district was within reach of a freezing works, lambs could be ready for sale in 16 weeks, and should show a profit of £1 per head. Ewes and lambs should be well cared for, and feeding oats with cocky chaff was a profitable method of hand feeding the animals, although the best results would be obtained by a varied diet. Handfeeding would not be essential if good rains fell during April and May. The sheep should be shorn at the commencement of warm weather, and the work finished before grass seeds ripened and became troublesome. Sufficient room should be provided for enough sheep to carry the shearers over the next day, and a grating to cover the floor would prove a distinct advantage. A wool table was necessary, and the floor should be kept clean. If a press was not available, the bale could be suspended from the roof with four plough chains. When filling the bale, two fleeces should be placed in each corner and two in the middle, and the fleeces then tramped in firmly. Brands, number of bale, and description of wool should be shown distinctly on the top of the flap and on the front of the bale—stencil plates being used for the work. Bales containing a few fleeces could be filled with bellies, pieces, &c., providing the wool broker was advised of the number of the bale and what it contained. In forwarding, the bale should be labelled carefully, the consignment note made out and attached,

the firm advised by post card when to expect the clip. In the discussion that followed, Mr. Dunn advised the use of turps to combat the fly pest. The other members recommended kerosene and Stockholm tar. Mr. Penna mentioned that several of his lambs had died three weeks after tailing. Members advised shifting the lambs into different yards and placing them in good clean yards and pasture. Sheep had to be yarded on account of dingoes, which did not give the lambs a good chance after tailing.

YEELANNA.

April 11th.—Present: 15 members and visitors.

CARE OF FARM MACHINERY.—Mr. Harold Glover, who read a paper dealing with this subject, said agricultural implements were expensive items of the farm equipment, and to give the best results they should receive proper attention. The plough and cultivator were found on every farm. Their axles could be protected from mud and dust by fixing leather on the axle, for which purpose the heel of an old boot could be used. The bridles and spindles of ploughs should be kept oiled. Wheels should be oiled or greased once a day. The binder contained many parts which worked rapidly. The fingers should be kept even to make the knife run easily. To test the knife, the knife box should be opened or the driving rod should be removed, and the knife worked backwards and forwards with a finger or wrench. If the knife worked heavily, it would strain the bevel pinion and main driving chain. Bearings could not be fed by wick lubrication, so it was necessary to oil them separately and often. If canvases were run as slack as possible it would not be so much strain on the bearings, and the canvases would last for a longer period. The harvester should be overhauled before the crop was ready. The comb should be fairly close in order to strip clean when the crop was tough. The beaters should run as close as possible to the comb without "clipping." It was necessary to adjust the winnower properly, and if the driving belts were worked "slack" there would not be so much strain, and the machine would run more lightly. All machinery when not in use should be placed in a shed. If a shed was not available, all woodwork and iron should be painted once a year. All nuts should be kept tightened, bearings watched to see they were properly adjusted, and all working parts lubricated. Good oil should be used. Spare bolts and nuts should be carried in the tool box to replace breakages. If the use of wire could not be avoided, a bolt should be put in at the first opportunity, and the parts fitted together properly.

BUNORA, April 9th.—Mr. A. Deer read an article, "Wheat Pickling," from the *Journal of Agriculture*, and in the discussion that followed Mr. H. Wohlin said when treating grain he used four to five single handsfull to a kerosine bucket of water, mixing it with the wheat on a prepared floor with a shovel, and he had never been troubled with diseased wheat. Several members favored dipping a butt of seed in a barrel. Mr. S. Pedler asked if it would be safe to sow new land with clean seed without pickling. The opinion of all members was that it was risky, because one could never be sure that smut spores were not on the seed. All members favored copper sulphate solution for pickling.

BUNORA, May 2nd.—Mr. S. L. Wohling contributed a paper in which he emphasised the need for members to pull together if they wished to make their Branch a useful unit of the Agricultural Bureau.

LIPSON, April 8th.—Various subjects of local and timely interest were brought before the meeting, and an interesting discussion ensued.

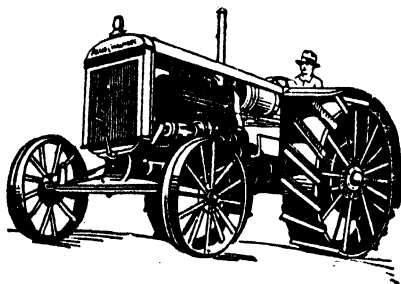
PETINA, April 4th.—Mr. H. L. Hughes read an article, "Sheep Classing," and an instructive discussion followed.

POOCHERA, May 6th.—Several subjects, including "Wheat Pickling" and "Crop Competitions," were brought before the meeting, and an interesting discussion followed.

RUDALL, April 9th.—The meeting was devoted to a discussion on items of interest connected with the past harvest, and many interesting points were brought forward.

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STREAKY BAY, May 9th.—The Hon. Secretary (Mr. C. Thom) read a paper, "The Drift of the Rural Population to the Cities." It was decided to hold Crop Competitions during the coming harvest.

WUDINNA, April 18th.—Members were favorably disposed towards the suggestion to hold crop-growing competitions in County Le Hunte. Other matters of local interest were also brought forward for discussion.

EASTERN DISTRICT.

COOMANDOOK.

February 7th.—Present: 13 members and three visitors.

FARMERS' EXPERIMENTS.—In the course of a paper dealing with this subject, Mr. Goodale said in that district farmers did not pay sufficient attention to experimenting with a view to improving the average yield of cereals. The average wheat yield for their district barely reached 8bush, or 9bush., and yet the rainfall for the past season had been one of the best on record. He admitted that their land was not all that could be desired from a wheat-growing point of view, yet there was no reason why the average yield of wheat should not be raised at least 50 per cent. Experimental plots on each holding would go far towards achieving that objective. He suggested fencing off at least 10 acres of land of an average quality, and subdividing it into four paddocks, so that at least two experimental plots could be cropped each year, the other two being fallowed. In one plot an experiment could be carried on with, say, two different varieties of wheat, each sown with the same quantity of super. After the varieties were selected he strongly recommended obtaining the seed from either Roseworthy College or one of the Government experimental farms, so that the variety would be true to type. There was no doubt that it was advantageous to obtain seed from other than local growers. Some varieties of wheat would be found more suitable to the district than others, and the results from the experimental plots would undoubtedly prove the best and most profitable types to grow. In the other plot either a different method of cultivation could be tried, or a heavier dressing of super applied. By taking wheat for an example, he did not wish to imply that it would be the best paying cereal, but more because it was the most extensively grown crop. Experiments might show that either oats or barley would give a better return per acre than wheat, even allowing for the low market value of the former. Mr. W. Trestrail read a paper, "Other Great Cereals," and a keen discussion followed.

LAMEROO (Average annual rainfall, 16.55in.).

April 4th.—Present: 13 members and visitors.

PREPARATIONS FOR SEEDING.—"The most important questions to be decided at seeding-time are, the preparation of the land for seeding, when to begin, when to finish sowing, the kinds of crops to be grown, and the order of sowing," said Mr. O. Eime in the course of a paper dealing with this subject. Continuing, he said fallow should always be kept free from weeds. If fallow was worked after summer rains, care should be taken to work it as shallow as possible, and if it was free from weeds it was better left alone until winter rains fell, when it could be worked before the crop was sown. No hard and fast rule could be laid down as to when sowing should be started. Speaking generally, and on the average of seasons for that district, the period of sowing would be from the middle of April to the end of June. Oats, wheat, and barley were the crops usually grown in that district. Oats could be sown the latter part of April, and wheat sown in the middle of May and finished about the middle of June. There would still be plenty of time to sow barley. He was in favor of sowing early varieties of wheat, such as Gluyas and Ford. They always started ahead of the weeds, and were able to resist a dry spell or a hot wind better than the late varieties. In the discussion that followed, Mr. E. J. Trowbridge thought the time to prepare for seeding was immediately after the preceding one was finished. He also advocated summer fallow. Mr. A. J. Koch said good fallow could be spoilt at

seeding time by working the land when it was too wet. Mr. C. E. Koch preferred to harrow the fallow after summer rain, instead of cultivating, and make the sheep keep the weeds down. He thought the most suitable time for sowing was from the first week in May until the first week in June. Mr. A. G. Burns said his best crops had been those sown three or four weeks after the first rain. Mr. L. A. Cornish stated that he had tried drilling in the seed before the cultivator, and found that the seed sown in that manner yielded better than the usual method.

MARAMA.

May 4th.—Present: 11 members.

QUESTION BOX.—The meeting took the form of a "Question Box" evening. In replying to the question, "What is the best method of destroying Bathurst burr?" Mr. S. Hutchinson suggested grubbing the plants, then drying and burning them. "What are the two best wheats to sow in this district?" Mr. J. Watkins preferred Currawa and Late Gluyas. "Is it advisable to drill wheat on new land without ploughing?" Mr. R. Greig said the answer would depend on the condition of the season, but as a general rule he preferred to plough the land first. "Which wheat pickle gives the better results, bluestone or formalin?" Members preferred bluestone. Mr. W. S. Gray said that wheat that was pickled with formalin germinated more quickly than that treated with bluestone.

MONARTO SOUTH (Average annual rainfall, 14in. to 15in.)

May 2nd.—Present: 18 members.

Pigs.—Mr. M. Nolan, who read a paper on this subject, said pigs were one of the best sidelines on the farm, provided they received proper attention. To make breeding a profitable undertaking, it was necessary to keep four or five sows. The best class of pig to breed was the Berkshire. The breeding sow should have at least 12 teats, placed well forward under the belly. The boar should be a pure-bred animal, and be kept in a yard away from the sows. A shed should also be provided for warmth and shelter. A paddock about one acre in extent should be fenced in for the sows. The land should be ploughed and well worked with the harrows, then drilled with about 2bush. of Cape barley with 1½cwt. of super. When the barley was about 6in. high the pigs could be allowed to graze off the barley. The sows should also be fed with skim milk and other slops if available. A small quantity of corn could also be given. One sow should be put in with the boar, and when stinted should be taken out and put back in the paddock. In about five weeks another sow should be mated, and taken out at the proper time. That would mean a new litter every five weeks. Under those conditions, when one litter was ready for sale, another would be ready to take its place. Before farrowing was due, sties should be erected. They should always be built with the front facing the east, to receive the full benefit of the morning sun. The back and sides of the sties should be made warm up to at least 2ft. 6in. from the floor. Iron made a neat and clean roof, but he preferred a straw roof, because it was cool in summer and warm in winter. The sow should be shut up at least three weeks before farrowing, and fed on soft feed, such as crushed oats, well soaked with slops or milk. Green feed should also be provided. Whole grain should not be fed to the sow close to farrowing. After farrowing, the sow should not be given too much food for the first three or four days, a little milk with a little bran or crushed oats would be beneficial. After four days she could be given as much as she could eat. For a ration, he preferred well-soaked crushed oats. When the young pigs were about four weeks old, a small sty close to the farrowing pen should be provided for them. An opening about 12in. high and 18in. wide could be made between the two sties so that the small pigs could get into the small sty. Milk could then be put in the small trough in the other sty, and the pigs would soon commence to drink. After a few days, grain could be added to the milk. The sty should be well bedded with straw to keep the young pigs warm and clean. Under such treatment, the pigs if sold at seven weeks old should return a good profit. Pigs purchased as stores and fed for fattening should be shut in pens, with four pigs in each pen. The pens should not be too large. The best bacon was produced from pigs fed on corn, wheat, barley, or oats. Whole corn should not be given to fattening pigs. All fattening pigs should be kept well bedded with straw to keep them warm and clean.

TREE PLANTING.—Mr. J. Hartmann, who read a short paper dealing with this subject, said the question of firewood would be an acute one in years to come, and timber on sand ridges should not be removed. With firewood at 30s. per load, it would pay better to leave the timber growing than attempt to crop sandy rises. If firewood was to be grown on sand drifts, the land should be netted to prevent stock and vermin from damaging the trees. Trees should also be planted around the homestead.

NEW RESIDENCE (Average annual rainfall, 12.50in.).

April 8th.—Present: six members.

A short paper dealing with the subject "Rabbit Destruction" was read by Mr. H. Klau, in the course of which the writer recommended the use of the poison cart where waste country around the farm block had to be treated, but where all the land was occupied he preferred the fumigator. It was most essential to destroy the burrows, otherwise the pest could not be kept under control.

NEW RESIDENCE.

May 6th.—Present: 14 members and two visitors.

ROTATION OF CROPS.—A member, in reading a paper dealing with this subject, said the farm should be divided into three equal parts, one portion being fallowed, one devoted to wheat, and one sown with oats or some other catch crop. Such a rotation would reduce the danger of take-all to a minimum. Wheat stubble should be burnt off and oats drilled in dry during April, in order not to interfere with the main seeding operations. The oat stubble should not be burned off, but stocked heavily with sheep and the land then fallowed. It was not necessary to strip all the oats; a portion could be given over to grazing during spring. If that were done it would be possible to keep a large flock of sheep, which would assist in keeping the fallow clean. Another advantage was the fact that fallowed stubble ground did not have the same tendency to drift as land that had been burnt. A point which militated against increased production was the shortage of labor, but with large implements one man could even do a lot of work, and the land would not set so hard if it was continually worked, and a cultivator could be used where otherwise a plough would be necessary. New land could be cropped twice in succession with wheat, and it could then carry a crop of oats; the next year the land should be fallowed.

PARILLA WELL (Average annual rainfall, 16in. to 17in.).

May 4th.

SUGGESTIONS FOR INCREASING CROP RETURNS.—Mr. J. S. Ferguson, in the course of a paper dealing with this subject, first made reference to the methods of farming adopted in the Wimmera district of Victoria. He expressed the opinion that seeding should be carried out later in their district than was generally the custom. Of late years he had been using super in moderately heavy quantities, and had found that the crop made a rank growth of stubble at the expense of the yield of wheat. He had tried feeding off to advantage, but it was risky because there was a danger of the rubbish getting ahead of the crop. By delaying seeding, time would be available in which to work the fallow twice before sowing. If circumstances were such that it was impossible to avoid a very late seeding, it would be necessary to do a fair area of fallowing before sowing, otherwise the land that could be brought under fallow at the right time would not be very large. The use of early maturing wheats, such as Ford, Caliph, and Gluyas sown late should suit their district. The summary of his suggestions were as follows:—"Work the fallow over twice after the first rains, thus assuring clean crops, and sow later than is at present customary with mid-season and early maturing wheats. Finally, increase the dressings of super."

PINNAROO WOMEN'S (Average annual rainfall, 16.74in.).

April 3rd.—Present: 10 members.

PICKLING RECIPES.—Members discussed the subject, "Pickle Making." Specimens of prickly gerkins and pickles made from them were brought by a member. Mrs. Sands had used small cucumbers for the same purpose with good results. The cucumbers were placed tightly in bottles, cold vinegar flavored with oil and a little salt was then poured over them, and the

bottles sealed at once. "Grape Pickles."—Mrs. Sands, in replying to a request for a recipe for grape pickles, recommended the following:—Put 1 gall. of vinegar, 1 teaspoonful each of cloves, mace, and allspice in a saucepan, and bring it to the boil. Pour the liquid over the grapes that had been tightly packed in bottles, and seal at once. It was important that a small stem should be left on each grape to prevent the juice escaping. A member asked "Why do mustard pickles sometimes develop a very dark color?" It was suggested that mustard, curry powder, tumeric, and flour should be used for pickling. Mrs. Cooke stated that she boiled tomato sauce for four hours, and it kept splendidly. Afternoon tea was provided by Mrs. Dowd and Miss Kelly.

WILKAWATT WOMEN'S (Average annual rainfall, 16in. to 17in.).

April 14th.—Present: 10 members and three visitors.

IRONING DEMONSTRATION.—The monthly meeting was held at Mrs. F. R. Koch's residence. An ironing demonstration was given by Mrs. Koch and Mrs. Pritchard. Two benzine irons of different makes were used. It was agreed that these irons were much superior to the ordinary flat or box irons, for the following reasons:—(1) Quicker heating; (2) a smoother ironing surface; (3) cleaner; (4) easier to light; (5) no sparks to fall and burn garments; (6) they are quite safe when understood, and the cost was negligible, running into about 3d. an hour; (7) temperature could be regulated easily; (8) an even heat could be maintained; (9) the irons were more easily kept clean. The irons were self contained, and could be run without having gas or any form of the petrol light laid on for general lighting purposes.

WILKAWATT WOMEN'S (Average annual rainfall, 16in. to 17in.).

May 19th.—Present: 15 members.

PLANNING THE HOME AND ITS DECORATION.—Mrs. A. G. Ellis, who read a short paper dealing with this subject, said the home on the farm should have five or six large rooms, a bathroom, pantry, and cellar or cellarette, and a

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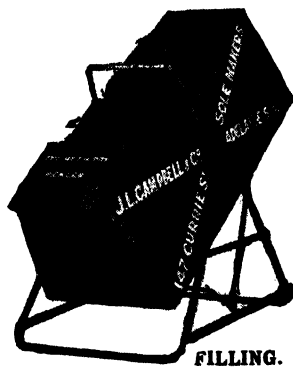
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verandah around the house. Fireplaces should not be built in bedrooms if plenty of ventilators were provided. A large dining-room would permit of the furniture being arranged in nice style. It was a mistake to over-decorate the rooms with pictures, especially portraits. In the farm home the piano could be placed in the dining-room. Mantelpieces should be made over the fireplaces in the dining-room and kitchen, but these should not be crowded with a number of small ornaments. The kitchen should be handy to the dining-room, with the pantry off the kitchen and a cellar in the pantry. The safe should be in the pantry, and shelves provided for jams, pickles, sauce, &c. A fair-sized kitchen was to be preferred to a small room, and the cupboard should be provided with sliding doors. The linen-press could be placed in the bathroom or in a large washhouse. The copper should be built in the washhouse with troughs along the outside wall, and rainwater taps over the troughs. A large tank at the washhouse and one at the kitchen would enable water to be laid on to both rooms. If the floor in the kitchen was of timber, a cement hearth should be made by the fireplace, to guard against the danger of fire. Walls should not be papered, but given a coat of watercolour kalsomine. In the discussion that followed, some members considered that the bathroom should be placed outside the main building. Mrs. W. R. Neville exhibited a book showing plans of modern buildings.

WYNARKA.

April 8th.—Present: 19 members and two visitors.

SHEEP.—In the course of a paper dealing with this subject, Mr. J. Pearce said the settler in the North, when selecting a good flock of sheep, should first give consideration to the frame and fleece of the animals. Sheep with heavy neck wrinkles should be rejected, because those, as a rule, indicated a weak constitution. The sheep mostly favored in the North were Merinos and crossbreds. Ewes should be crutched before lambing, to minimise attacks from flies. They should also be provided with good feed and water at least six weeks before lambing. For settlers in the mallee who intended carrying a flock of sheep he recommended the purchase of Merino ewes, revenue being thereby obtained from the wool and lambs. The lambing season was a very important period of the year for the man who kept sheep. Rams should not be allowed to run with the ewes all the year. They should be put in on a fixed date and taken out on a fixed date. For the mallee, he considered the end of August to be about the best time for lambing, the coldest of the weather was then over, and the greenfeed would have made a strong growth. Poison should be laid for foxes, otherwise the percentage of lambs reared would be very small. To destroy foxes he suggested dragging a trail with a piece of old ment, sheep's head, or couple of skinned rabbits, and laying poisoned baits. Baits could be made of caul fat minced and made into small balls the size of marbles. A small hole should be made in the bait with a stick and as much strychnine as would lie on a threepenny piece placed therein. The hole should then be closed and the bait buried on the trail. That should be done at least a fortnight before lambs were expected, and repeated every week afterwards. Weaners should be placed in the best paddock with a few old sheep to lead them around. One of the main points in the successful management of the flock was to cull systematically, both for frame and wool, care, of course, being taken to secure a good ram. In the discussion that followed, Mr. Henderson thought that the man who was starting with a small flock could leave the rams with the flock all the year round, provided there was ample feed. Mr. Gore agreed with the previous speaker. Other members favored shutting the rams away from the ewes after the mating season. Mr. Yeates thought August rather late for lambing, and favored the month of May.

WYNARKA.

May 6th.—Present: 16 members.

WOOL CLASSING ON THE FARM.—In the course of a paper under this heading Mr. C. Waterhouse said if a good price was to be obtained for the wool, it was necessary to give some attention to the preparation of the clip. A wool table should be made with slats on top, and these should be placed wide enough apart to allow small locks to pass through. As the fleeces were thrown on the table,

they should be skirted lightly, the pieces placed on one side, and the fleece rolled up ready for classing. The pieces should also be picked over and dags and burry pieces removed. With a farm clip it was not necessary to make too many classes. He suggested the following classification:—"A ewes and ewes," and "A wethers and wethers." The finest and whitest wools should be placed into the A classes, whilst the other class would consist of those wools which were short and coarse, yellow and heavy. Before classing the fleeces it was advisable to test the wool for breaks. To test the fleece, a small piece of wool should be held between the first finger and thumb of each hand. The wool was then stretched gently and at the same time the second finger of the right hand was run over the wool. If the wool came apart, it was classed as broken and should be put in a separate lot. Lambs-wool and rams' fleeces should be carefully picked over and kept separate. It was not advisable to cram the wool into as few bales as possible, in the hope of saving one pack. Two hundred pounds was the minimum weight for a bale of wool. Four bales or under made a "star" lot. Farmers were protected to some extent when their wool was interlotted with another's small star lot. Hence the object of making more bales of wool even if they only weighed 200lbs. Bales should be branded on the top and front, never on the bottom. The farmer's name or name of the homestead should appear half-way down the front of the bale, then the class of wool, and underneath the number of the bale. A broom was very essential in a shed, and should be used frequently; straw, chaff, &c., reduced the price if it became mixed with the wool. Mr. S. Hood thought that the number of classes advocated was rather many for the farmer with a small flock. Mr. Gore suggested that the worst of the wool should be bagged separately, and agents allowed to class the other portion of the clip. Mr. Rackham doubted if classing paid for a few bales. A splendid exhibit of vegetables grown on fallow was tabled by Messrs. Yeates Brothers.

YOUNGHUSBAND.

April 9th.—Present: eight members.

PIGS AS A SIDE LINE ON THE FARM.—Mr. G. H. Mann, who read a paper dealing with this subject, said in districts where dairying contributed so much of the farm income, the pig was of considerable importance. A question which often arose was, "Is it best to breed and sell the progeny as weaners or slips, or to raise them to maturity and sell as porkers or baconers?" In the former case a larger number of breeders could be kept at a lower ration cost than in the latter case. So far as breeders were concerned, he had found that in addition to the available milk a liberal supply of green feed, such as lucerne or maize, in the summer and autumn, and berseem in the winter and spring, was practically all that was needed. When the pigs were born, grain offal would be necessary. Bran should be given to the sow just before and after farrowing to stimulate the milk flow. When the suckers were able to feed from the trough pollard should be added to the milk, and a little

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later crushed or ground oats should be given. That should be placed in a trough that had been fenced off to keep the sow and other pigs away. At from six to eight weeks old the pigs could be marketed as weaners. The animals could be castrated when four weeks old. If it was decided to raise the pigs to maturity, the green feed ration should be gradually reduced and grain substituted. All grain should be ground or crushed and soaked in hot water. One often heard complaints that the wheat crop had suffered badly from "take-all," and one of the recognised aids in combating the disease was to grow more oats. The pig, in addition to sheep, solved the problem of finding a market for those cereals when grown more extensively. He did not consider oats alone a good fattening grain feed, but when mixed with barley or a little wheat, they made one of the best fattening foods that could be produced in that district. For breeding purposes and stores the yards or run should be roomy, but for fattening space should be more limited. He preferred the Berkshire pure-bred sire and grade sow. Grade sows generally had larger litters and were better mothers than the pure-bred animals. One disadvantage in raising pigs was the fact that during the past years there had been very considerable fluctuations in prices. That was caused through there being no regular export of pork products. People took up the breeding of pigs extensively when prices reached the maximum, which caused a glut in the market and a consequent lowering of prices to a point unprofitable to the breeder. On the average farm from four to six sows could be kept, and with two litters a year the pigs would prove a valuable source of additional revenue to the income of the farmer.

BRINKLEY, May 4th.—Mr. H. Martin read an instructive paper, "Shoeing Horses for Farm Work," and a keen discussion followed.

KRINGIN, March 7th.—Mr. P. Morrow read an instructive paper, "Breaking and Handling the Station Colt for Farm Work." A short discussion followed.

RAMCO, April 6th.—The subject, "Weeds and Orchard Pests," was brought before the meeting, and an instructive discussion followed.

SOUTH AND HILLS DISTRICT.

CHERRY GARDENS.

May 5th.

Mr. H. Jacobs read a short paper, "Wattle Growing," in which he contended that it was not profitable to grow wattles on good land. In discussing the paper, members agreed that many other crops would give a better return than wattles, when grown on good land.

FINNIS.

April 14th.—Present: seven members.

MIXED FARMING.—In reading a paper on this subject, Mr. A. Carter said with the high cost of production caused by the scarcity of labor and the high duty on all farm machinery, coupled with unsuitable climatic conditions and the high prices of land, one could not hope for success in wheat farming alone, and the only safe road to success was by adopting mixed farming operations. Even then success would only be attained by careful management, by fallowing the land and keeping it well worked and free from weeds, sowing the best seed, using the best implements and keeping them in good order, and finally having sufficient strength to work the implements. On a farm on which from 200 to 250 acres were cropped, six horses, young and active, would be sufficient to do the work, provided they were well cared for and carefully driven. The most valuable sideline at the present time was sheep. He advised land holders to go in more extensively for oats and peas. Oats were not so expensive to produce as wheat, and were a better food stuff. If oats were sown early, ewes could feed them off until late in the season, and then a payable crop could be reaped. That plan enabled the farmer to reserve the grass paddocks and give the lambs a better start, which meant that the lambs could be marketed earlier, and a better fleece would be cut from the ewes. Oats

were also to be preferred to wheat, because more feed was obtained after harvesting operations. With a good crop of wheat, very little feed could be had from the stubble until the next spring, but with oats, if any were shaken out or lost from the harvester, the sheep would get the most of them, or if rain fell good green feed would be available. Peas were one of the best crops for fattening sheep and lambs. Peas could also be cut and cured for hay, and fed to cows, for the crop was a good milk-producing fodder. Crushed oats also stimulated milk and cream production. The cows that he favored for that district were the Jersey or Shorthorn-Jersey cross. One of the most noticeable mistakes in dairying was that of overstocking. Water was an important item, and the cows should have easy access to their place of drinking. If the herd was well fed and watered, and regularly milked, it would prove a consistent source of income. Pigs should be handled in conjunction with dairying. The Berkshire-Yorkshire cross responded quickly to feeding, and matured more quickly than the pure Berkshire. For breeding and fattening pigs, good sties, warm and dry, and well drained, were most essential. For the hilly country in the Finnis district the Merino was the best breed of sheep, but for the mixed farmer on the plain country, crossbreds were to be preferred. The most important item in the successful management of the farm flock was the sire. When the farmer had purchased a good line of ewes, costing at the present price up to 50s. per head, it was a serious mistake to put a 30s. ram with them. The farmer should be prepared to pay a good price, and purchase an animal from a well-known and reputable breeder. Not until people realised that cheap sires meant a loss would the standard of sheep and cattle of the State improve. With the more general adoption of top dressing, the carrying capacity of pastures would be considerably increased, but it would not pay to top dress to run such cattle, sheep, and lambs as were often seen in local markets. He was convinced that the price of wool would fall, and the export of mutton and lamb would then be done on a larger scale than ever. Breeders should not try to dictate to the

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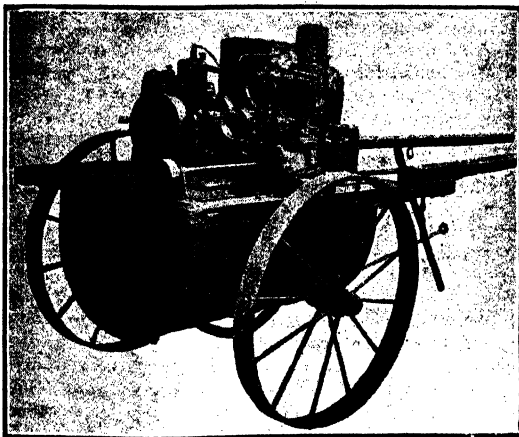
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people in England what class of meat they should eat, but give them that type of carcass which they desired. Again, it was often stated that the cattle of to-day were not so good as they were 20 years ago. If that were so, it was largely the fault of the breeders through the use of "scrub" bulls. They had every opportunity to breed the best beef in the world. The same applied to dairy herds. The Government gave every inducement to improve the dairy herds by offering to subsidise the purchase of bulls, yet very few people availed themselves of the opportunity. In the discussion that followed, Mr. H. R. Butler thought six horses would need to be very well cared for to do the work required to crop 250 acres in that district every year. He preferred the British Black or Tamworth pig, because both of those breeds produced bacon of a high quality. Mr. J. Bradford said one of the great drawbacks on the farm was the scarcity of suitable labor. Most of the young men gradually drifted to the city. Very few farmers had a cottage suitable for a married man, and consequently they could only get single men to work for them.

KANGARILLA.

April 9th.—Present: 19 members.

FENCING.—Mr. T. Steer read a paper dealing with this subject. In the discussion that followed Mr. G. Connor stated that fencing was becoming an expensive item, and in a few years would be dearer, because the timber was fast disappearing from the hills. He favored pink gum for posts, because it was durable and not subject to the ravages of white ants. Blue gum and stringy bark posts, he said, were not serviceable because of the white ants, and in a little time only the shell of each post was left standing. Red gum posts were good, but when cut from old trees were apt to snap off at the ground level when stock leaned over the fence. A good and cheap fence could be made by using 8in. posts placed $\frac{1}{8}$ yards apart, with iron droppers between, and five wires of No. 12 barb. He considered a high fence a mistake, because cattle crawled through. The most suitable height for the fence was 3ft. 6in. Messrs. Steer and Biddle favored high fences, because cattle straying on the main road were apt to jump over a low fence. Mr. L. Smart favored a fence of four wires and netting, the first wire being 15in. from the ground, the second 33in., and the third 34in., and one on top of the posts.

MORPHETT VALE (Average annual rainfall, 23.32in.).

April 9th.—Present: 13 members and visitors.

CONCRETE FOR THE FARM.—In the course of a paper dealing with this subject, Mr. H. Sprigg first gave a brief historical outline of the processes and materials used in the manufacture of concrete, and then referred to the introduction of Portland cement in 1824. The paper then read as follows:—"Concrete is comparatively cheap building material, and skilled labor is not required for the many uses it can be put to on the farm. Concrete is an artificial stone made by cementing together fragments of hard material, such as broken stone, termed the aggregate, whilst the cementing material, such as lime or cement, is termed the matrix. The active agents in the process of solidifying are the cementing material and the water; the aggregate is inactive. The strength and quality of concrete depends chiefly upon the nature of the aggregate, the strength of the matrix, the proportions in which the materials, including water, are mixed together, and the efficiency of the mixing process. The compressive strength of concrete is usually far in excess of any stresses to which it may be put, its weakness being its tensile strength; hence the use of steel embedded in the concrete, so that it takes the tensile strains. This is called reinforced concrete, and is the form now in general use. Experience has proved that if the reinforcing steel is properly embedded in the concrete it will last indefinitely without corroding, but to ensure this it must be covered by at least $\frac{1}{2}$ in. of concrete, and when the surface is exposed to the weather it should be more. The primary importance of the cleanliness of all materials cannot be too strongly emphasised. It is safe to say that more failures in concrete are due to the materials containing foreign matter, such as earth, clay, and vegetable matter, combined with faulty mixing, than to weak materials. If the aggregate is dirty, it must be washed to obtain good results. Natural

aggregates are gravel shingle, that is, beach gravel. When it contains large stones it should be screened for ordinary work through 1½ in. wire netting, and if the proper proportion of sand is present it will only need the addition of cement. Any dense hardstone, broken to the required gauge, can be used for heavy work and foundations, 2 in. metal is recommended; and for reinforced work 1 in. to ½ in. The stone should be brittle, and break into angular fragments, not flat or shaley, and should not contain stone dust when broken by a crusher. Sand is the fine part of the aggregate, and the proportion used should be sufficient to fill the voids in the coarser aggregate and cover the whole of the aggregate. The sand should be sharp and gritty, and contain grains of varying sizes up to all that will pass through a ½ in. mesh. It should be free from dust, clay, earth, and vegetable matter. The cement commonly used is known as Portland cement, so called from its resemblance in appearance to Portland building stone. Any of the brands of well-known makes are suitable for ordinary use. The water used in mixing concrete should be clean and preferably fresh; the use of hard or salt water causes white efflorescence on the surface. On no account should dirty water, or water containing organic matter from stagnant pools, be used. Excess or insufficiency in mixing is to be guarded against; about 20 galls. per cub. yd. is a fair amount. Whether concrete is wet enough can be gauged after it is deposited and rammed—there should be a slight wetness of the top surface. If insufficient water be used, the cement does not set properly; too much washes the cement away. The concrete must, however, be sufficiently wet to completely fill the space around and below the reinforcement without forming voids. For reinforcement, steel bars of varying shapes and sizes and various forms of mesh reinforcements are in common use, the particular form depending on the requirements of the work. For use on the farm for ordinary structures, ½ in. to ¾ in. steel bars, ordinary pig netting, and No. 4 reinforcement wire in lewt. rolls is used, whilst for the finer work, such as troughs, &c., finer netting can be used. For rough work, old fencing wire, barb wire, and old iron can be utilised. There are few hard and fast rules with regard to mixing concrete, and as long as the result in all cases is a properly

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mixed material, the quickest method is the best. On no account must concrete be worked after setting has begun. I again emphasise the urgent necessity for cleanliness, and to secure this a mixing board is essential. Cement concrete mixed on the ground is a waste of material; the man who does that might just as well use lime or even mud, because the results would be about equal. The size of the mixing board will depend on the size of batches mixed. A 10ft. x 10ft. board will take a batch of about 1 cub. yd.; a small cleat around the edges of the board is an advantage. A simple mixing method and one to be recommended is first to spread out the aggregate, then the sand over it, and lastly the cement. Two shovellings will then mix the dry material fairly well, beginning to shovel at one end and shovelling all in one direction, then shovelling it back again. The water is then applied, preferably from a 'rose.' The more gentle the application the better, especially during the third shovelling. A fourth shovelling should thoroughly mix the material ready for placing. For foundations or other large work, the concrete should not be too wet. The heap should not run when shovelled up. For running forms and around reinforcements the heap should run or spread slightly when shovelled up. All materials must be measured on the mixing platform with gauge boxes or measures, the size of the gauge depending on the size of the batch. For small batches buckets make handy measures. In proportioning materials the essential condition is the production of a solid body without voids or interstices, all pieces of aggregate and particles of sand being worked together by the cement matrix; consequently, the sand should be sufficient to fill all voids in the coarse aggregate, and the cement should fill all interstices in the sand and coat all the aggregate, including sand. The average percentage of voids in a well-graded aggregate of crushed stone is from 35 per cent. to 40 per cent.; in gravel the percentage is a little less, varying from 30 per cent. to 40 per cent. Sand usually contains 40 per cent. to 50 per cent. of voids. For example, 1 measure of cement, $2\frac{1}{2}$ of sand, and 5 of stone will not make 8½ measures of concrete, but slightly over five measures, theoretically, because the cement and sand should just fill the voids between the stones. The proportions of materials for concrete are described as, say, 1: 3: 4, which means 1 part of cement, 3 parts sand, and 4 parts of broken stone. This is quite strong enough for ordinary work such as walls, floors, &c., but for foundations and rough work a 1: 2: 4: 8—1 cement, 2 sand, 4 gravel, 8 stone—would be sufficient. Proportions can be taken in between according to the strength required for the work. The materials required in the following proportions for 1 cub. yd. of concrete, taking the voids at 50 per cent. in stone, gravel, and sand are:—

4 parts stone = 1 cub. yd. broken stone	} 1 : 2 : 4
2 parts sand = 0.5 cub. yd. sand	
1 part cement = 0.25 cub. yd. cement	

1 : 2 : 4 : 8	}	8 parts stone = 1 cub. yd. broken stone
		4 parts gravel = 0.5 cub. yd. gravel
		2 parts sand = 0.25 cub. yd. sand
		1 part cement = 0.125 cub. yd. cement

The approximate weights of the materials are:—Cement per cubic foot= 90lbs., 11 sacks of 204lbs. or 12 sacks of 187lbs. to the ton; 1 cub. ft. of pit sand weighs about 102lbs.; river sand, 106lbs.; coarse gravel, 97lbs.; and clean shingle, 93lbs. Galvanized corrugated iron makes cheap forms for walls, and can be used either vertically or horizontally."

STRATHALBYN (Average annual rainfall, 19.28in.).

March 24th.—Present: 26 members.

The subjects "Noxious Weeds" and "Vermin Pests" were brought before the meeting, and a good discussion ensued.

CULTIVATION OF THE SOIL.—At a further meeting, held on April 7th, a paper dealing with this subject was contributed by Mr. S. Crawford, in the course of which he advised ploughing 3in. in the majority of soils and 2in. for many of the lighter soils. The ground should be turned up as early as possible in the season. When seeding operations were held up owing to the soil being too wet, fallowing could be proceeded with. Many farmers were adverse to fallowing early, on account of the growth of weeds during the winter. They preferred

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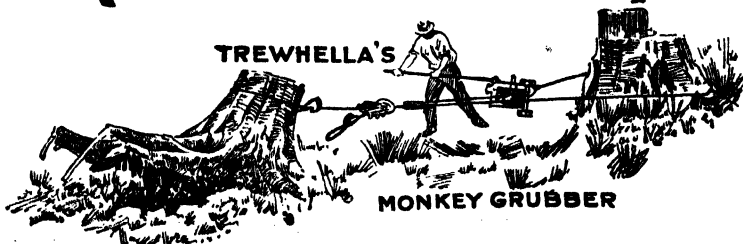
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to wait until later, when the fallow could be worked down without delay, and the growth of weeds kept down to a minimum during the early part of the season. Whilst that practice, known as late fallowing, gave very fair results, he did not consider that it could be compared with early fallow, which would more than pay many times over for the extra workings required. Early fallow should be left a few weeks after ploughing for the sun and air to act on it. Then it should be broken down with the harrows. That would make a good surface and destroy a great number of smaller weeds. Harrowing should be done while the ground was in the best possible condition, preferably after a rain. With the advent of warm weather, late August or early September, the springtooth cultivator, working with a crimped share, should be brought into use. Upon the cultivation of the soil the greater part of the success of a crop depended. He spoke strongly against working fallow whilst it was dry, unless a heavy growth of rubbish was in evidence, and demanded drastic action, but with implements that were able to handle the work quickly, the rubbish could be destroyed before it obtained a good stand, and with sheep upon the fallow, especially whilst cultivating, many weeds could be destroyed. Sheep also packed the subsoil and added to the fertility of the soil. One of the greatest advantages of the large cultivating implement was that it enabled the farmer to cover the ground quickly when it was in the best possible condition, i.e., when the soil was damp after a rain, that left the earth pulverised and well ridged, and not too fine. Most soils in that condition would stand much wind before they began to drift. If the cultivator had done the job thoroughly throughout the tilling season, the seed bed should consist of a fine, loose, shallow top, the lower soil of the early fallow having been well set by the rains, and a firm bottom for the deeper root system of the plant.

RAPID BAY.

May 9th.—Present: 20 members.

GROWING WATTLE BARK.—In the course of a paper dealing with the subject, "The Possibilities of Wattle Bark Growing in this District," Mr. A. Bennett considered that a man with a small capital could work 200 acres, and if the undergrowth was controlled, the bark should bring in £4 per week from the time the seeds were sown. The country most suitable for the wattle in their district could be bought for £1 per acre, and it would cost £1 per acre to grub the undergrowth. The following summer, the land should be fired and wattle seed sown during winter at the rate of 5lbs. to the acre. He suggested that old timber should not be touched until the wattles were about five years old, when the timber could be ring-barked. If "rung" before, the fire caused a large number of seedlings to spring up, and it would cost £1 per acre for grubbing. If the seeding were left until the wattles were a good size, the wattles would be so far advanced that they would out-grow the seedlings. The cost of ringing would be about 5s. per acre, and it would take about nine years before the wattles would be ready for stripping. The trees should be thinned out every year for about eight years, taking off about $\frac{1}{2}$ ton per acre per year, which would make 4 tons per acre, and in 17 years, at an average of £9 per ton, would return £36 per acre. Expenses of stripping could be reckoned as follows:—Stripping £3 per ton; rope, 5s. per ton; and carting, £1 per ton; making a total of £17 per acre, leaving a profit of £19 per acre for 17 years. Those figures, he considered, could be doubled if the wattles were sown on ploughed land. In Victoria and New South Wales, the bark was chopped and bagged and sold at auction, which he thought was a much better plan than that in vogue in South Australia. If bark growers united and erected a plant to deal with the bark, the South Australian product would be worth as much in Adelaide as it was in Melbourne and Sydney, whereas under present conditions the South Australian price was about £3 per ton lower.

BALHANNAH, March 28th.—On March 28th a homestead meeting was held at the residence of Mr. H. Wicks, when members inspected the orchard and nursery. Afternoon tea was provided by Mrs. Wicks. A further meeting was held on May 8th, when papers dealing with the subject, "The Divining Rod," were read by Messrs. J. Smith and W. Duffield of the Mount Barker Branch.

BLACKHEATH, April 14th.—Mr. R. S. Cockburn delivered an address, "Top Dressing Pastures." Many questions were answered and a good discussion ensued.

BLACKHEATH, May 15th.—An article dealing with the subject, "The Blow-fly Pest in Sheep," was read by Mr. H. Paech, and a keen and instructive discussion ensued.

BLACKWOOD, April 14th.—Mr. C. H. Beaumont (Orchard Instructor and Inspector) gave an address, "Sprays Used in America Not in Use in Australia."

CLARENDON, April 6th.—Mr. March read a paper, "The Drift of the Rural Population to the Cities." Mr. E. Dunmill exhibited the model of a bag lifter, and gave a short account of a recent trip he had made to Victoria. A further meeting was held on May 4th, when Mr. A. L. Morphett read a paper, "Apple Growing."

IRONBANK, April 18th.—Mr. R. Coates read a paper, "Strawberry Growing." An interesting discussion followed, members being of the opinion that close planting gave the best returns.

KANGARILLA, May 8th.—Eighteen members and seven visitors attended the May meeting, when Mr. D. F. Laurie (Government Poultry Expert) delivered an address, "The Poultry Industry."

LENSWOOD AND FOREST RANGE, April 27th.—Mr. F. Lawrance read an interesting paper in which he related his experiences along the Murray during the past fruit season.

MCGILLIVRAY, April 6th.—The monthly meeting was held at the residence of Mr. A. Brumby. Mr. E. Soager read a paper, "Sheep on the Farm." Members also discussed the subject, "Power Farming."

MOUNT PLEASANT, April 17th.—Members discussed the subject "Fox Destruction," and were of the opinion that everything possible should be done to destroy the pest, but at the same time it was necessary to take steps to prevent the indiscriminate and negligent use of poison.

Two a Month

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McLAREN FLAT, May 7th.—Twenty members attended the May meeting, when Mr. A. H. Robin, B.V.Sc. (Government Veterinary Officer), delivered an address, "Ailments of Farm Stock."

PENNESIAW, May 11th.—Mr. S. F. McArthur read a paper, "Top Dressing Pastures," and an interesting discussion followed.

PORT ELLIOT, May 16th.—The Chairman (Mr. H. Welch) read a paper, "The Drift of the Rural Population to the Cities," and an interesting discussion followed.

ROCKWOOD, May 4th.—The Hon. Secretary (Mr. M. Meyer) read a paper, "The Drift of the Rural Population to the Cities," which aroused a keen discussion.

SHOAL BAY, May 12th.—Members discussed the question, "What is the Cost of Producing Hay for use on the Farm?" A keen discussion followed. Mr. B. Bell stated that it would cost £2 to produce one ton of hay. The figures compiled by Mr. G. Turner showed that hay could be grown for £1 1s. 4d. per ton on Kangaroo Island.

SOUTH-EAST DISTRICT.

ALLANDALE EAST.

May 8th.—Present: five members.

TRACTOR v. HORSES.—A paper dealing with this subject was read from the *Journal of Agriculture*, and in the discussion that followed Mr. N. McCabe considered that for successful farming, both the tractor and horses were necessary. Mr. C. Griffin said that in wet weather horses would have to be requisitioned to carry on the work of the farm. Mr. A. Kieselbach thought more could be accomplished with a tractor than a team of six horses. Mr. M. McCabe said that the maximum life of a tractor would be about 10 years, whereas a team of horses could be maintained indefinitely by breeding. At the end of 10 years the tractor would be "scrapped," whilst the team would be as good as ever. Mr. W. Laslett thought the advantage of the tractor was that it did not become fatigued as did animals, and the machine could be used both night and day. Mr. Griffin quoted an instance where after five years a tractor was out of commission, and the purchaser was glad to revert to horses. Mr. M. McCabe considered that for small holdings horses were of more use than tractors. Mr. Kieselbach thought that the benefit of tractors was that besides doing the work of horses they could be put to many other uses, such as chaff cutting, threshing, wood cutting, &c. Mr. Griffin considered a small oil engine would be sufficient to do such work on the farm. Mr. McCabe said that on large holdings such as in the wheat belts, tractors might prove their worth and be an asset to owners, but small farms could be successfully worked with a good horse team.

KALANGADOO WOMEN'S (Average annual rainfall, 33in. to 34in.).

April 11th.—Present: 11 members and three visitors.

HERB GROWING.—Miss Hill, who read a paper dealing with this subject, said the ground on which herbs were to be grown should be deeply trenched. After digging and working the ground, it should be left for about a week, the surface being occasionally raked or turned to kill weeds. The herbs most commonly used were parsley, sage, thyme, mint, and marjoram. Parsley was generally used as a seasoning, and its medicinal properties were well known. "Lincoln Green" was a favorite variety for cultivation purposes. The end of winter or autumn was the best time to plant. Parsley seed was particularly slow in germinating, and no disappointment should be felt if five or six weeks elapsed before the first green blade appeared above the ground. The seed should be sown thinly and at a shallow depth. Very small seeds should be set in fine soil and the seed bed watered before sowing the seed. The seed should be scattered over the surface of the soil, lightly covered with sawdust or light soil, then finally patted down with the back of a spade. Water should be applied from a watering can fitted with a fine rose, about three times

a week. Good healthy plants of sage, common thyme, lemon thyme, mint, marjoram, &c., could be purchased throughout the year, but autumn and spring was the best time to set cuttings or seeds. If sufficient space was available, the cuttings or roots should be set out about 2ft. apart. Herbs should be cut about November, when the plants were blooming. The crop was best cut close to the ground with a sickle-hook in order to prevent waste. In drying, the sun should be allowed to play directly on the herbs. A clear dry heat was required, and care should be taken to protect the herbs from showers of rain. When dry, the herbs should be sifted several times, for which purpose an ordinary ash sieve could be used. Glass bottles were recommended in which to store the herbs.

On Easter Monday the annual picnic was held in perfect picnic weather, and was well attended. Several events, including foot racing, high jumping, stepping the distance, &c., took place. In the evening a concert and dance was held.

KALANGADOO.

March 14th.—Present: 12 members.

The Hon. Secretary (Mr. W. J. Evans) read an article, "The Fly Pest in Sheep," and an interesting discussion followed.

PREPARING SHEEPSKINS FOR MARKET.—A further meeting was held on April 11th, when a paper dealing with this subject was read by Mr. Bennett, in the course of which he said when skinning the animal it was advisable to strip the whole of the carcass, including cheek, poll, legs, and tail, because the extra weight increased the value of the skin. The killing should be done on a draining-board, and care taken to prevent blood getting on the neck of the skin. It was advisable to skin the sheep immediately after killing, otherwise blood would collect in the veins and stain the pelt. Cutting the skin should be carefully avoided, because that considerably lessened the value of the skin. Soon after the pelt had been removed it should be painted with a skin wash to prevent weevils from attacking the skin. The following was a recipe for a good skin wash:—Put 8galls. of water into a copper with 10lbs. of soda ash, $\frac{1}{2}$ Barbados, stir well until it boils, then add 15lbs. arsenic. To prevent boiling over, it was a good plan to have a bucket of water handy to pour into the copper. One part of this mixture to 5galls. of water was about the right proportion for painting. Every part of the skin should be treated, and the wash should not be applied until the skin had become somewhat firm. The work of drying was more important than was generally recognised, because, should the skin be improperly dried, it would become unshapely and wrinkled, and would not sell to the best advantage. To obtain the best results, the skins should be dried in the shade, hung lengthways, head to tail, over a beam or rail, and care taken that the edges of the skin were kept straight. It was also important to see that one skin did not touch another until thoroughly dry. When dry, the skins should be taken from the beam and

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stacked one on top of the other, pelt to pelt, wool to wool. In packing the skins, the outer or woolly side of the skin should be exposed. A piece of bagging placed at each end, before the wire was put around, would also protect the skins. Each bundle should weigh about 2½ cwt. The skins should be dispatched as frequently as possible.

KONGORONG.

May 4th.—Present: 12 members.

Mr. F. C. Caine read a paper, "Stabilizing the Wool Market." He suggested that for the present all wool sales by auction should be discontinued, and that the Australian markets should be closed until buyers were prepared to purchase wool at a reasonable price. If the banks could not accommodate those who required an advance on their clips, he suggested the establishment of an agricultural bank for that purpose. A keen discussion ensued.

MOUNT GAMBIER (Average annual rainfall, 32in.).

April 11th.—Present: 13 members.

SOIL CULTIVATION.—The following paper was read by Mr. E. Kentish:—Much attention is given by farmers generally to the growth and harvesting of their crops. They are careful, and rightly so, to ensure that not a particle is wasted, but they do not stress sufficiently the most important department of their work. I refer to the preparation of the soil for cropping. Fallowing is almost completely ignored by the majority of local farmers. Whilst not advising lengthy fallowing periods of our expensive soils, there are several ways of fallowing without materially affecting the number of crops. Local cropping comes under two headings—winter sowing for early feed, hay, and grain, and spring planting for summer fodder and potatoes. It is always advisable to have the land ploughed and prepared early. Experiments carried out at home with ploughing in spring and constant summer working showed an advantage of two to three times the crop over adjacent land worked in the usual South-Eastern style. A paddock worked early can be safely sown in March under dry conditions, and the crop will grow until rains come and produce prolific early feed. Failing this, ploughing immediately after the grass is gone is very beneficial and nitrifies the soil. Another great advantage of such methods is that it cleans the land. Sorrell, which has spoilt many crops, can be killed in this way during average years. Winter growths start readily with the first rains and are easily killed at seeding time. In smaller plots, where dairymen want early winter feed, it is advisable to roll the fallow and mow. Rolling is advantageous at any time, because it makes a firm lower bed and a fine tilth on top. In preparing for summer crops it is imperative that the land be thoroughly broken to allow summer grasses to germinate. Loose cloddy land soon loses its moisture. To conserve moisture the land should be harrowed after each rain. Notwithstanding the wet winters, land intended for summer growth should be worked under dry farming methods, because we have no clay subsoil and the summers are often dry. The value of the cultivator is not sufficiently recognised. In other districts it is used more than any other implement. Its use in pulverising the land and tearing up sorrell can be highly recommended.

NARACORTE (Average annual rainfall, 22.60in.).

March 14th.—Present: 11 members.

SUMMER CROPS.—Mr. C. Drake read the following paper:—There is no other crop that will give a better and quicker return under irrigation than lucerne. The first matter to be considered by the farmer proposing to grow lucerne is the question of weeds. Young lucerne grows slowly, and is apt to be killed by weeds during its earlier stages of growth. This is particularly the case where the seed is sown in autumn. Just before seed is sown the land should be lightly ploughed, harrowed, and rolled. A firm, fine seed bed is necessary, and to obtain this it may be necessary to roll twice. If weeds or grass are still present they should be worked out with a spring-toothed cultivator. Generally speaking, the better the con-

ditions the more seed is required, because on good soil and with abundant moisture, plants far apart produce coarse, woody stems, and the greatest value of the lucerne is in the leaf. Eight pounds sown through a seed drill give good results, while 15lbs. to 20lbs. are used when sown broadcast. The Hunter River and Tamworth are the best-known two varieties, and are broad-leaved, upright growing varieties, and throw out a good foliage. The best time to cut is just as the young shoots come at the bottom. Millets.—Cultivation in lumpy or hollow land is bad, therefore the soil requires to be well worked, and a fine, firm seed bed made with shallow surface soils. Deep ploughing is not advisable, especially on loose open soils. Rolling before seeding is particularly useful. The secret of success in growing millet is shallow seeding, and to sow only when the ground is warm. From 1in. to 1½in. is quite deep enough to sow, and seed put down too deep or sown too early in cold ground will result in poor germination. Millet can be sown from September to January. Broadcast at the rate of 15lbs. per acre, or when sown in drills 8lbs. to 10lbs. of seed is required. Japanese millet is the most popular of this family. It comes early, and can be fed off in from four to six weeks after seeding. Maize.—Deep alluvial river and creek flats are the best soil for maize culture; but it can be successfully cultivated for a fodder crop on high land, and in soil of only medium fertility. In all cases soil for maize crops requires careful cultivation, and where soil is only of medium fertility heavy manuring is necessary. Under average conditions the best time for sowing, both for grain and fodder crops, is from early September to the middle of October. Should the young crop be badly frost bitten the best thing to do is to re-sow. Whether grown for grain or for fodder the seed should be sown in drills, and not broadcasted. For fodder, the seed should be sown in drills 3ft. apart in the rows. For grain the seed must be sown 3ft. apart every way. The depth of planting varies with the time of sowing and the weather. The earlier the sowing and the drier the soil the deeper, but never more than 3in. Mr. S. H. Schinckel said summer crops were very profitable to the man with a small area of land. Lucerne was a very good crop, but there were other crops more profitable, taking at yield per acre. Lucerne was very good for cows when mixed with maize. Mr. E. S. Alcock (Field Officer for the South-East) said lucerne gave the quickest return, but they could get bigger yields from such crops as maize and mangolds. They could raise crops of maize and mangolds in a few months in the year, and they could use the land for other purposes. That was not the case with lucerne. Summer crops raised from small seeds required heavy dressings of stable manure. They could have good summer crops from the various sorghums. The Department of Agriculture obtained 11 different varieties from America to experiment with, and they found varieties known as the Black and Red the best. Mr. W. Loller preferred maize for a summer crop, but he thought the South-East too cold for sorghum. They got the best summer crops from sowing them broadcast. He liked lucerne, but there were other crops more profitable per acre. Barley was a good crop, and Indian Runner wheat made a good summer crop. The Chairman (Mr. C. Bray) said lucerne did very well, but it required irrigation in summer. He had obtained two cuts off his lucerne plot without any irrigation, but quite a number when irrigated.

TATIARA (Average annual rainfall, 19in.).

March 14th.—Present: nine members.

VEGETABLE GARDENING.—Mr. F. Scown read the following paper:—“To provide the home with vegetables for the whole year, it is necessary to have a good piece of ground and a dam, windmill, or well. If the land has a gentle slope, the water can be run off in the winter and watering in the summer will be facilitated. Much of the land in this district is not strong enough to grow vegetables satisfactorily, and it is advisable to manure it well before planting. I suggest giving all the land, except where carrots and parsnips are to be grown, 2in. or 3in. of farmyard manure once every year, and also a good dressing of superphosphate. To get the soil in the right condition for vegetables, it is not practicable to give it a year's rest under bare fallow. Instead, different crops are grown on the same land, and generally the land has to carry two or more crops each year. Good vegetables

cannot be produced from poor seeds, and if the seed is not saved for home use, it will pay to purchase special seeds. It is necessary to keep weeds down through the winter if good results are to be secured. During summer the ground requires a lot of water to give good returns. To obtain an assortment of vegetables for the table, both for cooking and for salads, I advise sowing salads and vegetables in January, to take the place of tomatoes and cucumbers when the cold nights spoil the summer stuff. Sow at intervals to provide winter salads. Also sow cabbage and cauliflower for the winter, and continue small sowings each month, except June. Turnips can be sown at any time that will not bring them in during very hot weather. They grow nicely in hot weather, but in themselves are too hot to be palatable. February is a good month to sow a large bed of swedes. Potatoes do well when sown in February, especially if watered until the rain comes. Sow main crop of onions at any time after the middle of March. Sow carrots and parsnips in March, in order to have young vegetables when the spring-sown carrots are old and rank. In April almost any kind of winter vegetables can be sown. Sowings of peas and beans can be continued until the middle of September. In May all winter vegetables should be sown. In June early potatoes and all vegetables that are to be kept for seed should be sown. Sow in July small beds of early varieties of winter vegetables to come in after the old vegetables have gone to seed. August is too late for cauliflowers, the sun will be too hot when they come in, and they will be a bad color. The main crop of carrots and parsnips should be sown on ground that has not been freshly manured. If the manure is not thoroughly rotten these plants "fork," and are difficult to prepare for the table. Sow the main crop of carrots and parsnips in September to avoid too much weeding among the young plants. Always get carrots and parsnips up while the ground is wet and the weather showery. Parsnips do not germinate well if sown more than half an inch deep. During September start sowing summer vegetables where the frost will not catch them. All summer stuff is easy to grow if given enough water."

TANTANOOLA.

May 2nd.—Present: 11 members.

The Hon. Secretary (Mr. R. Campbell) read a paper, "The Drift of the Rural Population to Cities." In reply to a question, Mr. P. Seeborn said his method of treating oats with poison for the destruction of sparrows was as follows:—To a coffee tin three-quarters full with oats, add sufficient poison to cover the top of the oats, then add enough water to nearly fill the tin and shake well. Keep the lid on the tin until ready for use, and scatter the grain behind the drill. Mr. R. Campbell exhibited sweet corn in the stalk and cob. Some of the former were 11ft. 8in. high, and were grown alternately among tomato plants at intervals of 3ft. Individual cobs were 10in. long, and contained approximately 1,000 seeds. Mr. Campbell also tabled green stem marrow kale about 4ft. high; chou moellier and turnips sown January 25th, both showing splendid growth; green rye sown in February 2ft. high; and a cucumber 4lbs. in weight. Mr. W. R. Warren reported that he had sown 45 acres of rape in December. The seed did not germinate until January, but since then it had made such splendid growth that he had had 475 sheep on it for a month, and they were making little impression on it. Members then discussed the subject "Best Method of Manuring Potatoes," when it was generally agreed that putting the manure by hand on the set was not the best way. The better plan was to drill the manure on the surface before planting and harrow or scarify the land.

KEITH, April 25th.—The Hon. Secretary (Mr. A. W. Shannon) read a paper, "The Drift of the Rural Population to the Cities," which aroused a keen and interesting discussion.

KONGORONG, April 6th.—Mr. F. W. Perkins delivered an address, "Women on the Farm," and an interesting discussion followed.

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T. BUTTERFIELD,

Minister of Agriculture.

POINTS FOR PRODUCERS.

Agricultural Bureau Congress.

Whilst the agenda for the Thirty-sixth Annual Congress of the Agricultural Bureau of South Australia, which is to be held in Adelaide on September 7th, 8th, and 9th, has not yet been finalised, the Secretary of the Advisory Board of Agriculture (Mr. H. J. Finnis) has intimated that some special features have already been fixed. His Excellency the Administrator (Hon. T. Slaney Poole, M.A., LL.B.) has consented to open the Congress. The Director of Agriculture (Professor Arthur J. Perkins) will deliver an address, entitled, "Is rural production on the decline in South Australia, and if so, what are the factors contributing thereto?" The Director of the Waite Agricultural Research Institute (Dr. A. E. V. Richardson, M.A., D.Sc.) will give an address illustrated with lantern views on "Methods of Increasing Primary Production," and Professor T. Harvey Johnston, M.A., D.Sc. (Professor Zoology, University of Adelaide), will address the Congress on "The Sheep Maggot Fly Problem." The women's session of the Congress will be addressed by Dr. Gertrude Halley, Medical Officer of the Education Department.

Annual Conference of Upper Northern Branches.

The annual conference of Upper Northern Branches of the Agricultural Bureau is to be held at Wilmington on July 15th. The conference will extend over three sessions. Papers are to be submitted by Mr. J. Schuppan (Wilmington), "Curing Ham and Bacon"; Mr. C. W. Patterson (Booleroo Centre), "Conservation of Fodder"; Mr. J. Crocker (Wepowie), "Tree Planting"; Mr. J. J. Modystach (Wilmington), "Cultivation"; and Mr. M. J. Carey (Booleroo Centre), "Seeding." A demonstration will be given by the Dairy Expert (Mr. P. H. Suter). In addition, a number of questions dealing with wheat pickling, seeding operations, manuring, and plant pests, &c., will be discussed. The Department of Agriculture will be represented at the gathering by the Director (Professor A. J. Perkins), Orchard Inspector (Mr. J. B. Harris), Dairy Expert (Mr. P. H. Suter), and the Assistant Secretary Advisory Board (Mr. F. C. Richards).

Shothole and Red Spider Attacking Almonds.

Stating that he had an area of 10 acres under almonds, which were badly attacked by both shothole and red spider, a correspondent in the Willunga district sought the advice of the Horticultural Branch of the Department of Agriculture. The Horticultural Instructor (Mr. George Quinn) advised spraying the almonds twice a year if the shothole was bad, first when the leaves were falling in autumn (say, mid-May), and again when they were budding out in July or August,

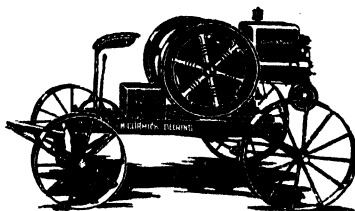
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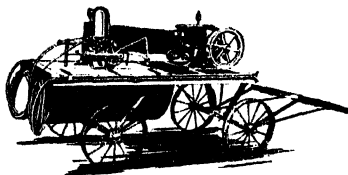
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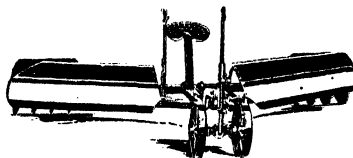
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using Burgundy mixture made of 1lb. bluestone and 1½lbs. washing soda to 10galls. of water. For red spider (*Bryobia mite*), he advised spraying with lime-sulphur compound, 1gall. of commercial lime-sulphur in 70galls. of water, when the mites first began to emerge, which was usually during the first days of early summer, after the leaves came out and the fruits set. Almonds were sprayed or dusted systematically in California for the above pests, and the results of local tests were distinctly encouraging.

Planting Fruit Trees.

Winter operations at the present time are occupying the attention of fruitgrowers, both amateur and commercial. Pruning, cultivation, and planting trees and vines are each commanding attention. Perhaps the most important factor in relation to the establishment of an orchard or vineyard, once the site has been selected, is preparing the ground prior to planting. In a dry climate such as ours, fruit trees should be encouraged to root deeply and to spread their roots over a wide area. To enable them to root deeply into layers of soil which are not rapidly dried out in the summer, the soil must be disturbed to a considerable depth in the average land. The Horticultural Instructor (Mr. George Quinn), of the Department of Agriculture, mentioned recently that it was desirable when about to plant in localities where a spade depth of loam overlay stiff red clay, to work into the clay as deeply as possible, say, to a depth of 8in. or 10in. That operation would allow the moisture to penetrate and even soak away better than if it collected at the depth of the unbroken clay subsoil. If the bed of clay should be a thick one, it was not desirable to dig holes down into the clay wherever the tree was to be set; such cavities acted as collecting pots for the water as it soaked through the land, with the result that the roots of many kinds of fruit trees were rotted during the winter. The disastrous effects of that were not noticed until early summer put a strain on the plant by requiring it to maintain its growth. In such soils, it was better to break the land all over to the same depth, even if only 12in. or 15in. The deciduous trees most susceptible to the effects of accumulations of water, as mentioned above, were classed by Mr. Quinn in the following order:—Almond, apricot, peach, apple, plum, quince, pear, grape vine. Trees of the citrus family, such as the orange and lemon, required better drainage through the soils than was demanded by most of the deciduous kinds, otherwise their somewhat sappy roots very quickly rotted.

When planting where the sub-layers consisted of limestone strata, that should be broken if found in anything like a continuous layer, and if practicable, a layer of stone should be removed. That would enable the roots to enter the more rubbly and open sublayers and give the plants a better chance. As with the clay subsoil, the limestone should not be brought to the surface. The preparation of the land for planting afforded a good opportunity of placing some well-rotted stable manure or bonedust immediately beneath the trees. An application of 2lbs. or 3lbs. of bonedust, well worked into the subsoil,

would prove of great assistance to the tree or vine after the first two or three years. The same might be said of a suitable application of farmyard manure. However, the fertilisers should be thoroughly mixed into the sublayers, and not allowed to remain concentrated under the plant.

To Poison Rats.

The best rat poisons (according to the Stock and Brands Department) are barium carbonate and squill. Mix the barium carbonate and squill with some tallow fat or dripping to make a paste and smear it over slices of bread, like one does when buttering bread. Press two slices of prepared bread together to form a sandwich and then cut up into small squares, which can be distributed around the haunts. It is important that care should be taken to handle the baits as little as possible with the hands, otherwise rats will refuse to touch them. Place within reach of the baits shallow vessels containing water so that the rats can drink from them, as the taking into their stomachs of these poisons produces an intense desire to drink water which dissolves the drugs and hastens the poisonous effects.

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INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

[Replies supplied by Mr. ALAN H. ROBIN, B.V.Sc. (Government Veterinary Officer, Stock and Brands Department).]

Hon. Secretary, Agricultural Bureau, Yeelanna, reports (1) finding "balls" in stomach of sheep, (2) mare stiff in off front leg.

Reply—(1) *Re* balls found in sheep's paunches. These are common and well known to us. They are not caused by stinkwort, but are really wool balls, composed of wool, which the sheep have, at some time in their lives, swallowed. Sheep do at times contract the habit of biting and licking one another and swallowing fibres of wool, but more usually this swallowing of wool occurs when they are lambs suckling the ewes. The presence of the balls usually causes no inconvenience, though they would, when found on slaughter, explain the cause of an intermittent indigestion, which sometimes has occurred without apparent reason. Stinkwort in the dry stage is usually not eaten very freely by sheep, except they be kept short of other feed and are forced to eat it through starvation. If they eat it in any great quantities, without a leavening of other more easily digested food, it might quite easily set up an impaction. (2) *Re* mare. She is most probably affected with a ringbone on the pastern of affected leg. If you examine it closely, feeling with the fingers just above the hoof to the front and side of the limb, you may be able to feel a bony thickening there that is not present on the sound limb. A good blistering over the affected area should be carried out and the animal given a spell.

"E. W.," Lameroo, has (1) cow with small lump inside one teat, (2) pony stiff in front legs and hard lump on each knee.

Reply—(1) The small growth in the teat canal would have to be removed by surgical operation to afford complete relief. This could only be done by a qualified veterinary surgeon. You may try dilating the teat duct by repeated passing of a teat catheter, but you would have to be very careful, otherwise you may set up acute mammitis. The teat should be well cleaned, the tip painted with a little tincture of iodine. The teat catheter would have to be carefully sterilised by boiling each time before and after using; operator's hands must be scrupulously clean. (2) Clip the hair over the lump and apply a good strong blister, rubbing well in for 15 to 20 minutes. Do not put any in the back of the knee; be careful about that. Blister in the morning and keep pony tied up short all day. Next morning wash blister off with hot soapy water, smear the blistered surface over with a little vaseline or oil. Turn pony out for a spell of some weeks' duration.

"W. H. T.," Tarcowie, has mare with growth in the passage. The growth has developed into a sore and is discharging blood and matter.

Reply—Wash the affected parts daily with antiseptic solution (Condy's solution, coloured a faint pinkish tinge) to remove all discharge. Douche out the vaginal passage daily with some of the same antiseptic. Finally, after each day's treatment as above outlined, dress the sores by painting them with tincture of iodine broken down with an equal quantity of cold water. Be careful when doing this that the mare does not kick; the application of the iodine may cause some stinging momentarily. Put a handful of Epsom salts in the feed daily to keep the bowels laxative, or else feed green feed in the ration.

Hon. Secretary, Agricultural Bureau, Wirrulla, reports aged horse with heavy cough, nostrils distended and discharging. Horse is short-winded.

Reply—The animal is broken-winded, and the difficult and distressed coughing is due to loss of elasticity of lung tissue and rupture of some of the small air sacs. Treatment is unavailing to effect cure, and at the best can be only palliative. If possible, give the horse a good drench of raw linseed oil and then spell him for a few weeks. Subsequently feed on nourishing, easily digested feed, not too bulky in nature. Restrict the chaff and hay portion of ration and damp the feed. Never put horse to work immediately on top of a full feed. A fortnight's course of liquor arsenicalis, two tablespoonfuls a day on top of feed, will be of some benefit.

"M. T. M.," Rockwood, asks treatment for apoplexy in pigs.

Reply—Treatment of the complaint apoplexy in pigs when it arises is usually of no avail, as the attacks are usually sudden, very often rapidly fatal. Rational treatment, if it could be put into operation, would be the early application of a brisk purgative (Epsom salts), subsequently keeping the animals on short rations. The general management should be directed to preventing the condition from arising by avoiding sudden change from poor food on to rich food, especially if the rich food be of animal origin. Do not overfeed, or feed on damaged feed. See that the animals do not suffer from constipation and worms, and if necessary, treat suitably. Pigs should be given plenty of regular exercise to avoid getting overfat. If pigs are overfat and then are given sudden exercise, the condition may be induced.

Hon. Secretary, Weavers Agricultural Bureau, reports death of lambs six to eight weeks old, sluggish, froth at mouth, mopey, and slimy droppings.

Reply—They are dying of toxæmic poisoning resulting from an acute indigestion. Early green feed is likely to set up scours and indigestion in young lambs, especially if they are weakened in constitution as would result from not keeping the ewes in best condition by judicious nourishing feeding prior to and after lambing. When deaths occur like this, the sheep should all be moved at once for a time to fresh paddocks, if possible, where green feed is not so abundant, and given a little dry feeding on good oaten chaff. Provide a good tonic lick of salt 50 parts, air-slaked lime 30 parts, super or ground sweet bonemeal 15 parts, powdered sulphate of iron 5 parts.

Hon. Secretary, Blackheath Agricultural Bureau, asks (1) if a ram would serve ewes that had been treated for blowflies, and (2) a good ration for stall-fed stud sheep.

Reply—(1) It would be quite possible that such treatment of the ewes would temporarily stop mating by the rams. The presence of the dip on the buttocks of the ewes might interfere with the rams "smelling out" the ewes. Further, the act of mating might result in some of the dip getting on to the penis of the rams and setting up a "balanitis" which would stop the rams from working until it had recovered. When sheep are dipped, it is the usual custom not to mate the ewes up with rams for some days after, to avoid the possibility of such a "balanitis" occurring. (2) As a dry ration supplementary to green feed, the following would be useful daily:—Oats, barley, or wheat (all crushed), $\frac{1}{2}$ lb. to $\frac{1}{2}$ lb.; chaff (oaten, barley, or wheaten), $\frac{1}{2}$ lb.; bran, $\frac{1}{2}$ lb. to $\frac{1}{2}$ lb. Also give daily in the feed $\frac{1}{2}$ oz. to 1 oz. common salt and $\frac{1}{2}$ oz. to $\frac{1}{2}$ oz. of slaked lime.

“H. R.,” Honiton, has cow with red water.

Reply—Give the cow first a good purgative drench of Epsom salts 1lb., ground ginger 2ozs., molasses ½lb., warm water 1 quart. Subsequently give twice daily 1oz. (2 tablespoonsful) of liquid ferri perchloride, in a bottle of thin gruel, and give three times daily one of the following powders, each containing powdered nux vomica, 1 dram; powdered gentian root, 3 drams. Mix the powder in a spoonful of treacle and put on back teeth and tongue so that the animal has to lick it down. If possible, give a change of food and feed on nourishing feed. Put some steamed oats in the feed. Give daily in feed two tablespoonfuls salt and four tablespoonfuls of ground sweet bonemeal.

“S. J. H.,” Yeelanna, has 13-year-old gelding low in condition, stiff in joints, legs, and neck, and discharge from nostrils and urine has an offensive smell.

Reply—See that his teeth are in good order and if necessary have them dressed. Give a dose of raw linseed oil, 1½ pints, turps 2ozs., and subsequently feed on easily digested nourishing food, with good green feed as part of the ration. If you cannot give green feed, damp the feed, and put a handful of Epsom salts in it night and morning for a week. Ensure plenty of pure drinking water. Put him on to a course of the following tonic powders. If he does not eat well, give him one powder quarter of an hour before feeding, night and morning, but if he eats well, give it immediately after. Each powder contains:—Pulverised nux vomica 1 dram, pulverised gentian root 3 drams. Get sufficient to last a fortnight (that will be 28). The best way to give them is to mix them in a spoonful of molasses or honey to make a sticky paste, which you can smear on the back teeth and tongue. After the course of medical treatment, give him a run on good green feed. Keep his nostrils cleaned out daily. If he has a heavy cold, steam him daily with medicated steam (use a little eucalyptus or creosote in the water).

“F. Bros.,” Spalding, ask cure for horse with stoppage of the bowels.

Reply—Give a drench (through mouth, not nostrils) of raw linseed oil 1½ pints, turpentine 2ozs. If this does not act promptly and sufficiently, another dose may be given in three days' time, limiting the amount of oil to 1 pint. Have some of the following powders made up, each containing powdered nux vomica 1 dram, powdered gentian root 3 drams. Give one powder night and morning mixed up in a spoonful of molasses to make a stiff paste, which can be smeared on back teeth and tongue so horse licks it down. While drench is working, feed on sloppy feed. Subsequently feed on a ration containing some oats and bran and limit the quantity of hay or chaff. Supply green feed, if possible, to make up the necessary bulk.

Hon. Secretary, Agricultural Bureau, Yadnarie, asks are the vines or fruit of the paddy melon injurious to sheep?

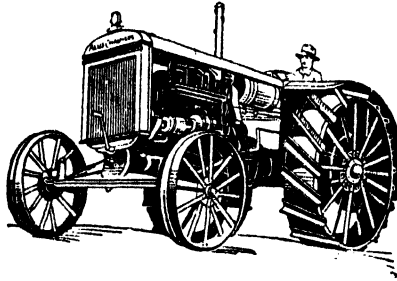
Reply—The “paddy melon” has, on occasion, been suspected of being responsible for trouble in stock, but stock have often been observed to eat them without any injurious effects. All experiments conducted specifically to settle the point as to whether it is toxic or not have given negative results, even when fed solely to stock and in very large quantities.

“N. J. R.,” Farrell's Flat, has horse lame in off front foot. The frog grows to an abnormal size and gives off an offensive smell.

Reply—The frog should be trimmed with a horn knife to cut away all diseased tissue and expose as far as possible the diseased area. Clean part up thoroughly by scrubbing with an antiseptic solution, wipe dry, and pack all over with powdered burnt alum or powdered calomel. Cover with a pad of tow and cotton wadding and keep in position by bandaging or enclosing foot in a piece of sacking. Reapply dry dressing daily, but do not repeat the washing. If there is any shoe on the foot, it should be removed. Keep horse on hard dry standing. Give two tablespoonfuls of liquid arsenicalis in the feed daily for a fortnight.

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"A. and F. P.," Lake Wangary, report mare kicked on lower portion of hock. The wound swells, breaks, and discharges at intervals.

Reply—You have a very serious case to deal with, and it is questionable as to whether your efforts will meet with success, as there has evidently occurred a severe infection of the hock joint through the original wounding. The area around the wound should have all hairs carefully clipped as closely as possible and then be cleaned up thoroughly with warm antiseptic solutions. If possible, get a chemist to make you up some 20 per cent. Lugol's solution of iodine in equal parts of glycerine. Inject about an ounce of this into the wound every day with a clean metal wound syringe (this should be boiled daily before and after using). As the discharge lessens, the injections may be made less frequently. After the injection of iodine solution into the wound cavity, apply a little also to the surface surrounding the wound. Then cover over entirely with a thick layer of dusting powder, composed of equal parts boracic acid, excised alum, zinc oxide. Cover the wound with a thick layer of absorbent cotton wool and bandage with clean calico bandage. In applying the bandage, it must be put on with plenty of cotton wool under it to prevent chafing, and the bandage should be wound alternately round below and above the hock, starting from below. The point of the hock cannot be bandaged and should be left uncovered.

"F. L. R.," Glencoe East, has horses unable to "back." Breathe heavily when working.

Reply—The horses should be turned out for a spell. If kept on at heavy work, they will very likely become badly broken-winded (quite possibly the mare is already affected), and when this condition arises it will interfere seriously with their working capabilities for all time, for it is incurable. Give them each a dose of physic (raw linseed oil 1½ pints, turps 2ozs.), and turn them out for a month or longer on to good green grass feed. If they cannot be provided with sufficient good feed in this way, supplement it with feeding twice daily on small feeds of damped bran and chaff with a little crushed oats added. You could put a tablespoonful of liquid arsenicalis in feed twice daily for a fortnight. Subsequently, they must be gradually and carefully reconditioned before being put to heavy work and liberal feeding on hay should be avoided. Feed on small repeated feeds of bran, chaff, and crushed oats, and only give a little hay, if you desire, at nights. Do not work immediately on top of feeding.

"W. S. T.," Birdwood, asks how heads of wheat could get into a swelling under the jaw of a cow.

Reply—They work their way through the buccal mucous membranes on the floor of the mouth and gain lodgment in the soft tissues between the branches of the lower jawbone, and ultimately, as foreign bodies, set up abscess formation.

Hon. Secretary, Blackheath Agricultural Bureau, reports death of sheep; swollen under mouth, which when cut off was like pink jelly.

Reply—The causes of losses of ewes, hoggets, and wethers is parasitic, and if close examination had been made of the fourth stomach (that part lying immediately behind the bible) they would have been found to contain numerous stomach wireworms. The condition set up by infestation of sheep by these worms is commonly known as "coast disease," and fuller particulars, with suggestions for suitable treatment, were published in the *Journal of Agriculture* of the month of June, 1925.

"G. H. S.," Mundalla, reports death of ewes. Fed on ½lb. oats per head per day, and then changed to paddock containing dry stinkwort, grass, and dry feed.

Reply—The sheep are dying from a form of toxæmia, the actual cause of which is unknown. Probably it has been induced by the change of feed. You should move them back on to a fairly bare paddock and hand-feed on chaff and oats. Provide also the following tonic lick, which the sheep can have constant access to:—Common salt 50 parts, air-slaked lime 30 parts, ground bonemeal 15 parts, sulphate of iron 5 parts. Gradually accustom them to the green feeding.

BLACK ROT OF CABBAGES AND CAULIFLOWERS IN SOUTH AUSTRALIA.

(By GEOFFREY SAMUEL, Plant Pathologist, Waite Agricultural
Institute, University of Adelaide.)

It was briefly noted in last month's issue of the *Journal* that black rot of cabbages and cauliflowers had come under the notice of the Department of Agriculture for the first time in South Australia. This is quite a serious disease of cabbages and cauliflowers in parts of Europe and North America. Although it may not become so



FIG. 1.—Cabbage head showing outer leaves affected with black rot. Note how the veins in the diseased area have become blackened. (South Australian specimen.)

serious under our climatic conditions, it is well for growers to know the characteristics of the disease, and the precautions which will ensure its control.

It is especially to be noted that it is a seed-borne disease, and if it is not certain that seed is free from infection, it is a wise precaution before sowing to disinfect it in the manner described below.

It is also primarily a warm-weather disease, an additional reason for being strict with seed disinfection, for many seedbeds are sown in late summer and autumn. In the cold weather prevailing during the growing period of the later-sown crops, it is probable that the disease will not develop much. However, the fact that it has caused some destruction in "Greenleaf" cauliflowers this year is an indication that in certain seasons it may do considerable harm, so that the following description of the disease and control methods may help growers in averting future loss.



FIG. 2.—Tip of cauliflower leaf, showing black rot disease killing marginal areas. (South Australian specimen.)

SYMPTOMS.

On cabbages, the disease is usually noticeable first as yellowish or discolored areas commencing at the edges of the leaves and gradually extending inwards. In these discolored areas the smaller veins have become brown or black, and often show up as a fine black network (Fig. 1). In later stages the disease travels down the veins right into the stem of the cabbage, which, when cut across, will show the blackened veins within. Sometimes gradual shedding of the leaves from below upwards also occurs.

On cauliflowers the disease also commences usually at the margins of the leaves, but the veins do not become so conspicuously blackened as in cabbages, the affected portions extending inwards as light-brown, dead areas (Fig. 2).



FIG. 3.—Leaf of "Greenleaf" cauliflower, showing large parts of the leaf-surface killed by the black rot disease, many parts having shrunk and torn away, leaving irregular, ragged holes. (South Australian specimen.)

It is on the "Greenleaf" cauliflower, however, that the disease has been most pronounced in South Australia this year, and its symptoms on this plant differ considerably from those usually described for the disease. It is the leaf-tissue between the veins which has been attacked most severely, at first in numerous small spots, but under favorable conditions becoming so bad that the whole of the leaf-surface is killed, leaving only the larger veins green. The dead tissue eventually becomes so disorganised that it shrinks and tears, leaving large, ragged holes in the leaf (Fig. 3). Some of the veins in the leaf-stalks are also blackened, and can be seen as small black dots on cutting the leaf across.

In no case seen here yet has the disease developed so far as to pass right down into the stump, forming a ring of discolored tissue and giving rise to a general wilt. Similarly, of course, there has been no progress of the disease from the stump out into healthy leaves. It is this stump form of the disease which causes the greatest loss in the countries where black rot is prevalent.

Black rot may also attack turnips, kohlrabi, rape, mustard, and other cruciferous plants.

CAUSE.

Black rot disease is caused by a bacterium named *Bacterium campestre*.

INFECTION.

This organism is exceedingly minute, and usually gains entrance to the plant through the water-pores at the edges of the leaves, where drops of water are often to be seen after a cold night. Once inside the plant, it multiplies into millions (Fig. 4), feeding especially

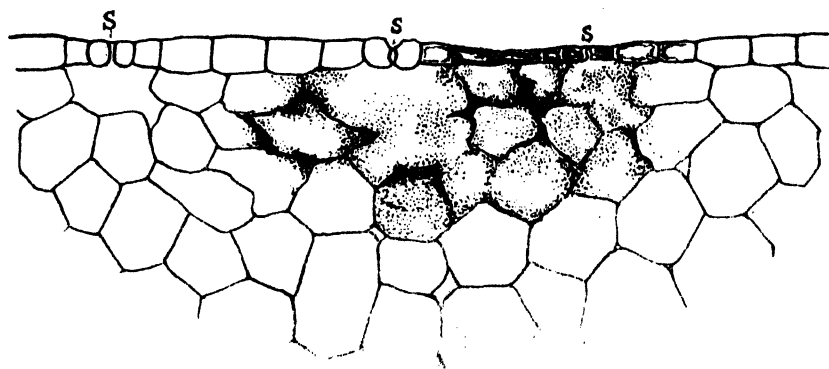


FIG. 4.—Section through small spot on midrib tissue of "Greenleaf" cabbage-leaf at very young stage. Hundreds of bacteria are to be seen (as small dots) multiplying in the plant cells, which are collapsing and turning black. The diseased spot is just beneath two stomates or breathing pores (S), thus suggesting that the bacteria may have first gained entrance through these. (Drawn from South Australian specimen, and magnified about 400 times.)

on the tissues comprising the veins. This soon leads to death of the infected parts, and the infection spreads by travelling down the veins often as far as the main stalk, and then out again into healthy leaves.

It was noted above that the symptoms on "Greenleaf" cauliflowers were rather unusual in South Australia this year, it being the leaf-tissue between the veins which suffered much more than the veins themselves. It seems possible that in this case the infection, appearing first as numerous small black spots over the leaves, may have occurred through the stomates or breathing-pores of the leaves as well as through the water-pores at the edges. It may be, however, that insects were responsible for this type of infection, for they have been shown to spread the disease considerably.

It has also been shown that seed gathered from diseased plants is frequently infected, and this is probably the main method of spread of the disease.

CONTROL.

Since the disease may be carried on the seed, it is most important to use only clean seed. If there is any reason to suspect that it may have come from plants which were diseased, the seed should be disinfected with corrosive sublimate or formalin. For comparatively small quantities of seed, it is best to buy the corrosive sublimate from a chemist, already made up as a 1 in 1,000 solution, or as a stronger solution of known strength which may be easily diluted down to 1 in 1,000. The seed should be soaked in this solution for 15 minutes. Formalin should be used at strength of 1 part in 240 parts of water, with 15 minutes allowed for soaking.

It is then important to plant only in a seedbed free from the disease, and finally, if possible, on soil free from the disease. As the disease is said to be able to live over for some years in the soil, it is wise to adopt a rotation of crops and spell once affected land from cauliflowers for a year or two.

Climatic conditions, however, have a marked effect upon the development of the disease, and instances have been known where a fairly clean crop has been harvested from a field badly diseased the year before. In general, it may be said that in moist, hot weather the disease may become very bad, while in cool, dry weather it will not develop very much.

As cauliflowers are a winter crop in South Australia, the disease is not likely to cause the same losses here that it does in parts of the United States.

Finally, it is always a wise policy to collect and burn, or otherwise thoroughly dispose of all diseased leaves and rubbish, and to remember that this is a source of infection from which running water, or the boots of men trampling on it, may carry the disease on to healthy land. In the words of Erwin F. Smith, the great American authority on bacterial diseases of plants:—

"To summarize: Avoid infected seed, soil, and manures; destroy insect carriers of infection; if the plants are attacked, harvest early, and use at once, or store in a very cool house."

Since writing the above, the author has seen an account by E. E. Clayton in New York State Agricultural Experiment Station Bulletin No. 506, in which he states that black rot infection in the cauliflower fields of Long Island in 1923 was rather unusual, in that it was more of a "dry leaf blight." He says:—

"In 1923, black rot appeared first as a speckling of the leaves; and the disease developed as a dry blight without any wilting or formation of cavities in the midribs and without any stump rot. The bacteria in many infections became inactive after a short time, the diseased tissues dried up, and, later in the summer, dropped out, causing leaf perforations. . . . These peculiar symptoms were associated with a cool, dry summer."

Evidently the symptoms on the South Australian specimens of "Greenleaf" cauliflowers infected by black rot were similar to those described by Clayton for cauliflowers on Long Island in 1923.

[NOTE.—On page 974 of the June issue of the *Journal* a paragraph relating to this disease was erroneously headed "Black 'Spot' Disease."—Ed.]

ORCHARD NOTES FOR SOUTHERN DISTRICTS FOR JULY, 1925.

[By C. H. BEAUMONT, Orchard Instructor and Inspector.]

Planting should be completed by now, but if you still have some young trees left, plant them only when the soil is workable. The tree will not thrive if planted in wet soil.

Pruning will be pushed on as fast as possible; care must be taken not to spread pests while using the secateurs. Woolly aphis is easily carried through the orchard while pruning. Big cuts should be painted with a thick paint, or with a paste of lime and bluestone, using 1½ lbs. of bluestone to 4 lbs. of lime in about 1 gall. of water. Either way will help the cut to heal and will prevent woolly aphis from taking hold.

It is well to prepare vines for swabbing by scraping off the loose bark. The wash used will have a better chance of success. For "anthracnose," or scab, the wash will be dilute sulphuric acid (10 per cent.) with or without sulphate of iron, and for "mealy bug" use a good lime wash in which some bluestone is added.

Ploughing will be proceeded with, varying the depth from last ploughing. Waterways must be kept clear. Strawberry and raspberry beds should be worked up if soil is not too wet. When clearing up used vegetable beds, do not put the refuse on the manure heap, burn the refuse if possible, otherwise bury it deeply; by so doing you will lessen fungus pests.

In the later districts it may still be necessary to spray citrus trees for prevention of "brown rot"; watch the fruit, and on the first sign of the rot use the spray.

Fruit in cool store will need constant attention to prevent losses.

Wet days come in handy for cleaning up spray pumps and appliances. Stocks of spraying material should be ordered.




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EXPERIMENTAL FARM HARVEST REPORT, 1924-25.

VEITCH'S WELL EXPERIMENTAL FARM.

[L. SMITH, Manager.]

This farm is situated in the hundred of Allen, 158 miles from Adelaide, on the Loxton Railway. It consists of about 3,800 acres of land, the bulk of which is sandy, the remainder running to shallow light-loam soils overlying hard limestone rock--conditions similar to thousands of acres of surrounding country.

THE SEASON 1924.

The returns set out in the following tables show that the season was an average one, in so far as total rainfall and yields were concerned, but the useful rainfall was considerably under the average.

The total rainfall, 12.45in., is just under the average over a period of 16 years, whereas the "useful" rainfall for the year, 7.97in., was

much below the average of 9.55in. However, considering the low fall of .19in. recorded for July, the results for the season are very satisfactory.

The bulk of the area seeded was sown whilst the soil was dry, during the months of April and May. The season did not really break until May 20th, and up to this date the germination was very uneven, but improved after rains at this time.

RAINFALL.

The distribution of the rainfall for the year, together with that for each year since 1917, is set out in the following table. This table also shows the mean rainfall over the period 1909-1924.

Rainfall Distribution—Veitch's Well, 1909-1924.

	Means,									Means,
	1909-1916.	1917.	1918.	1919.	1920.	1921.	1922.	1923.	1924.	1909-1924.
	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.
January . . .	0.34	0.45	0.07	0.20	0.10	1.61	0.48	0.04	2.01	0.48
February . . .	0.89	2.60	0.23	5.49	—	0.97	0.09	0.03	0.89	1.09
March . . .	1.44	0.78	0.49	0.36	0.33	1.24	—	—	0.41	0.95
April . . .	0.28	0.24	1.00	0.26	0.33	0.06	0.89	—	0.25	0.33
May . . .	1.34	1.15	1.31	1.88	1.45	2.19	3.06	1.75	0.69	1.52
June . . .	1.71	1.01	1.08	0.37	1.29	0.78	1.21	2.95	1.43	1.49
July . . .	1.16	1.14	1.39	0.29	0.79	0.91	0.91	2.81	0.19	1.11
August . . .	1.38	1.91	2.36	0.53	2.19	1.28	0.70	1.59	0.99	1.41
September . .	1.94	2.01	0.22	0.76	3.10	1.54	1.10	1.97	1.58	1.74
October . . .	0.79	2.38	0.98	0.45	3.66	0.45	0.73	0.65	1.47	1.07
November . .	1.07	1.72	0.07	0.62	0.95	1.03	0.09	0.03	1.37	0.90
December . .	0.73	1.21	—	2.03	1.31	0.30	1.02	1.51	1.17	0.90
Total . . .	13.07	16.60	9.20	13.24	15.50	12.36	10.28	13.33	12.45	12.99
“Useful” rainfall (April- Nov.) . . .	9.67	11.56	8.41	5.16	13.76	8.24	8.69	11.75	7.97	9.56

The distribution of the “useful” rainfall, together with the mean fall 1909-1924, is set out in the following table. Good spring rains were gauged, but it will be seen that the seeding and winter rains were comparatively light.

	1924.	Means. 1909-1924.
	In.	In.
Seeding rains (April-May)	0.94	1.84
Winter rains (June-July)	1.62	2.60
Spring rains (August-October)	4.04	4.22
Early summer rains (November)	1.37	0.90
Total “Useful” rainfall	7.97	9.56

CROPS.

In the fields, cereals were the only crops grown. In small blocks near the homestead, lucerne and Wimmera rye-grass gave good feed. Special attention is directed to Wimmera rye-grass as being suitable both on sandhills and flats for this district.

Hay Crops.—An area comprising 49.15 acres in Fields Nos. 3E and 3F was sown with Baroota Wonder and Triumph wheats, and Kelsalls and Kherson oats. This was cut for hay, yielding 60 tons, or an average of 1 ton 4cwts. 46lbs. per acre, which is slightly above the average for the period 1910-1924, 1 ton 2cwts. 37lbs.

Hay Returns—Veitch's Well, 1910-1924.

Year.	Rainfall.	Rainfall.	Area.	Total Yield.			Yield per Acre.		
	Total	"Useful"							
	In.	In.	Acres.	T.	C.	L.	T.	C.	L.
1910	16.91	10.15	82.00	82	0	0	1	0	0
1911	13.36	7.28	121.50	74	18	0	0	12	37
1912	12.16	10.87	218.00	109	0	0	0	10	0
1913	14.95	8.27	140.00	70	0	0	0	10	0
1914	6.24	3.66	100.00	Total failure.					
1915	9.83	8.79	158.00	180	0	0	1	2	88
1916	16.69	15.29	127.08	243	0	0	1	18	27
1917	16.60	11.56	69.01	110	0	0	1	11	98
1918	9.20	8.41	78.89	93	16	0	1	3	87
1919	13.24	5.16	109.88	45	0	0	0	8	21
1920	15.50	13.76	122.21	220	0	0	1	16	0
1921	12.36	8.24	65.59	90	0	0	1	7	49
1922	10.28	8.69	42.94	60	0	0	1	7	106
1923	13.33	11.75	71.54	150	0	0	2	1	105
1924	12.45	7.97	49.15	60	0	0	1	4	46
Means	12.87	9.32	—	—	—	—	1	2	37

Oat Crop.—An area of 40.4 acres of oats was harvested for grain. These varieties were sown on Fields No. 3E and No. 3F, being drilled in on fallow land between April 7th and 12th, at the rate of 40lbs. of seed and 1cwt. of 36 per cent. superphosphate per acre.

Fields No. 3E and No. 3F were fallowed between July 29th and August 8th, cultivated between September 10th and 20th, and again between October 6th and 17th, and then harrowed between February 23rd and 26th. These fields were finally harrowed after drilling.

The yields of these oat varieties are set out in the following table:—

Oat Variety Yields—Veitch's Well, 1924.

Variety.	Area. Acres.	Total Yield.		Yield per Acre.	
		B.	L.	B.	L.
Early Burt	15.13	242	15	16	1
Calcutta	5.32	78	24	14	31
Kelsalls	1.01	12	26	12	21
Scotch Grey	10.21	122	4	11	38
Kherson	5.08	59	32	11	31
Bathurst Early	2.50	23	23	9	17
Kherson	1.15	10	9	8	36
Farm average, 1924	40.40	549	13	13	24

Ruakura, on the north boundary of these fields, was fed off.

Of the oat varieties tested on this farm, Early Burt is considered to be the most suitable for grain purposes in this district, on account of its being early enough to allow of harvesting and having it out of the way of the way before other cereals are ready. Scotch Grey, Calcutta, and Algerian have proved good, consistent grain yielders, but are too late for hay.

With this year's average included, the mean yield for the period 1916 to 1924 is 17bush. 11lbs.

Following are the results of oats grown at this farm since 1916:—

Oat Returns—Veitch's Well, 1916-1924.

Year.	Total Rainfall. In.	"Useful" Rainfall. In.	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
1916	16.69	15.29	12.39	478 37	38 26
1917	16.60	11.56	50.19	1,396 35	27 33
1918	9.20	8.41	40.43	253 24	6 11
1919	13.24	5.16	39.17	379 12	9 27
1920	15.50	13.76	157.08	2,110 37	13 18
1921	12.36	8.24	36.30	623 30	17 7
1922	10.28	8.69	84.89	876 20	10 13
1923	13.33	11.75	116.49	2,165 12	18 24
1924	12.45	7.97	40.4	549 13	13 24
Means . . .	13.30	10.09	—	—	17 11

Barley Crop.—The barley crops harvested for grain were sown on fallow land, with the exception of the quantitative seed plots. The area sown in Field No. 3b was fallowed August 1st to 8th, cultivated September 12th to 17th and October 18th to 20th, harrowed May 4th and 5th. It was seeded May 23rd to 27th with 50lbs. of seed and 1cwt. of 36 per cent. superphosphate per acre. The yields obtained, together with the farm average for the year, are detailed in the following table:—

Barley Varieties—Veitch's Well, 1924.

Variety.	Area. Acres.	Total Yield.		Yield per Acre.	
		B.	L.	B.	L.
Tunis 4B (Plots B)	28.66	526	21	18	18
Tunis 1 (Seed Plots)	4.49	56	20	12	28
Tunis 4B	26.75	273	9	10	11
Farm average, 1924	59.90	856	0	14	15

The next table shows the returns secured from the barley crops grown on this farm since 1915.

Barley Returns—Veitch's Well, 1915-1924.

Year.	Total Rainfall. In.	"Useful" Rainfall. In.	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
1915	9.83	8.79	22.72	248 9	10 46
1916	16.69	15.29	20.10	517 20	25 37
1917	16.60	11.56	44.03	1,104 10	25 4
1918	9.20	8.41	49.68	305 5	6 7
1919	13.24	5.16	83.18	185 46	2 12
1920	15.50	13.76	73.20	2,232 48	30 25
1921	12.36	8.24	69.81	1,077 28	15 21
1922	10.28	8.69	72.24	947 38	13 6
1923	13.33	11.75	78.47	1,863 35	23 38
1924	12.45	7.97	59.90	856 0	14 15

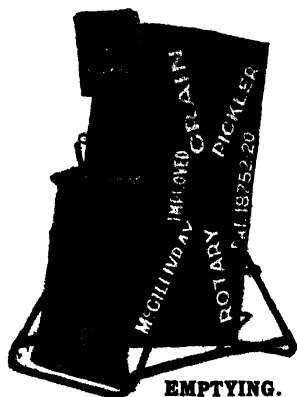
Means . . .	12.95	9.96	—	—	16 36
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Wheat Crops.—With the exception of the experimental plots, all wheat crops were grown on Fields Nos. 3B, 3E, 3F, 6A, 6B, 6C, and Fields Nos. 10A and 10B.

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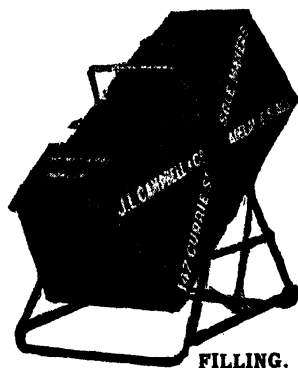


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The fallow lands in Fields Nos. 3B, 3E, 3F and 6A, 6B, and 6C were ploughed from July 2nd to August 8th, cultivated in September and October and seeded between April 7th and May 23rd at the rate of 60lbs. of seed and 1cwt. of 36 per cent. superphosphate per acre.

The bulk of Fields Nos. 10A and 10B, being "second year new ground," was skim ploughed between March 24th and April 5th, and drilled April 25th to May 7th with 60lbs. seed and 1cwt. of 36 per cent. superphosphate per acre.

Yields obtained from all these varieties are detailed in the following table:—

Wheat Returns—Veitch & Well, 1924.

Variety.	Field Grown. No.	Area. Acres.	Total Yield.		Yield per Acre.	
			B.	L.	B.	L.
1. Maharajah	6B	20.25	381	43	18	51
2. Baroota Wonder	6B	25.18	449	2	17	50
3. Sultan	6B & 6A	52.36	927	54	17	43
4. Baroota Wonder (Man- urial Plots)	6B	9.17	159	25	17	23
5. Late Gluyas	6B & 6A	43.85	695	20	15	51
6. Canaan	6C	16.27	255	30	15	42
7. Queen Fan	6C	16.25	255	35	15	44
8. King's White	6A	19.42	293	40	15	7
9. Gypsy	6C	3.34	50	8	15	1
10. Baroota Wonder (Expt. Plots B)	Exp. B	28.68	427	26	14	54
11. Maharajah	3E & 3F	2.48	32	15	13	0
12. Mixture	10A & 10B	92.15	1,152	28	12	30
13. Emperor	3E & 3F	2.48	30	43	12	23
14. Walker's Wonder	6C	50.87	625	59	12	18
15. Felix	3E & 3F	2.48	30	25	12	16
16. President	6C	16.14	195	15	12	6
17. Cumberland	6C	15.13	176	22	11	39
18. Baroota Wonder (Quan- titative seed tests) . .	—	4.49	46	15	10	18
19. Currawa	6A	11.78	120	40	10	15
20. Caliph	10A & 10B	102.83	1,040	34	10	7
21. Fortune	3E & 3F	2.48	20	30	8	16
22. Nizam	6C	1.03	7	32	7	19
23. Early Gluyas	3A	43.68	222	6	5	5
Totals		582.79	7,596	47	13	2

Some of these varieties, namely, Maharajah, Baroota Wonder, and Sultan yielded very well indeed, remembering that this season has only been about an average one, and the "useful" rainfall was below the average.

The particularly low average of Early Gluyas, in Field No. 3A, can be accounted for owing to a very poor germination on limestone land.

The next table gives details of the wheat crops grown on the farm since 1909:—

Wheat Returns—Veitch's Well, 1909-1924.

Year.	Total Rainfall.	"Useful" Rainfall.	Area. Acres.	Total Yield.		Yield per Acre. Bush. lbs.
	In.	In.		Bush.	lbs.	
1909	14.41	13.04	22.00	396	0	18 0
1910	16.91	10.15	197.50	2,156	0	10 55
1911	13.36	7.28	620.90	5,080	30	8 11
1912	12.16	10.87	569.00	5,544	18	9 45
1913	14.95	8.27	791.40	4,742	28	6 0
1914	6.24	3.66	951.00	325	30	0 21
1915	9.83	8.79	602.11	6,681	51	11 6
1916	16.69	15.29	407.74	7,102	20	17 25
1917	16.60	11.56	469.91	7,156	50	15 14
1918	9.20	8.41	287.89	1,905	28	6 37
1919	13.24	5.16	263.62	1,419	32	5 23
1920	15.50	13.76	287.52	6,384	55	22 12
1921	12.36	8.24	553.61	6,256	18	11 18
1922	10.28	8.69	427.84	4,219	34	9 52
1923	13.33	11.75	405.75	7,060	58	17 24
1924	12.45	7.97	582.79	7,596	47	13 2
Means	12.99	9.56	—	—	—	11 25

The farm wheat average of 11bush. 25lbs. over a period of 16 yields can be considered very satisfactory when it is taken into consideration that the total rainfall for the year has on three occasions been below 10in.

The behavior of the majority of varieties of wheat grown on this farm since 1918 is shown in the table following:—

Yields of Varieties of Wheats—Veitch's Well, 1918-1924.

Variety.	1918.	1919.	1920.	1921.	1922.	1923.	1924.	Means, 1918-1924.
	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.
Queen Fan	2 54	4 36	26 18	13 14	14 5	18 28	15 38	13 36
Baroota Wonder	5 30	6 7	26 13	11 23	11 6	16 59	15 6	13 12
Late Gluyas	3 40	2 13	19 43	11 43	12 57	17 9	15 51	11 53
Cumberland	8 29	5 10	18 47	10 11	10 16	16 41	11 39	11 36
Early Gluyas	9 53	6 44	19 19	14 56	4 34	15 21	5 5	10 50
Fortune	9 18	9 6	16 56	9 49	10 36	10 23	8 16	10 37
Yandilla King	10 35	3 18	25 10	11 37	11 8	11 5	—	—
King's Early	5 9	4 34	17 25	7 59	8 0	—	15 7	—
Caliph	—	7 50	25 28	11 53	7 39	15 1	10 7	—
Triumph	—	—	14 22	13 25	14 0	19 1	—	—
Sultan	—	—	—	—	14 41	25 34	17 43	—
Walker's Wonder	—	—	—	—	15 4	24 29	12 18	—
Canaan	—	—	—	—	14 16	20 6	15 42	—
President	—	—	—	—	16 23	14 55	12 6	—
Bajah	—	—	—	—	12 58	17 43	—	—
Maharajah	—	—	—	—	9 5	20 25	18 51	—
Felix	—	—	—	—	10 11	14 30	12 16	—
Emperor	—	—	—	—	11 53	12 8	12 23	—
Ford	—	—	—	—	—	14 55	—	—
Currawa	—	—	—	—	—	12 4	10 15	—
Florence	—	—	—	—	—	10 36	—	—
Le Huguenot	—	—	—	—	—	9 49	—	—
Farm average	6 37	5 23	22 12	11 18	9 52	17 24	13 2	—

EXPERIMENTAL PLOTS.

A series of permanent experimental plots, on which the various treatments to be given are to be continued for a number of years on the same blocks of land, has been mapped out. The series consists of manurial and cultivation tests with both wheat and barley.

Manurial Plots with Wheat.

The permanent manurial plots in which wheat is being grown in the following rotation—(1) Pasture, (2) bare fallow, (3) wheat—carried their fifth crop this season.

The treatment of the different plots is as follows:—

Plot. Manuring per Acre.

- 1 $\frac{1}{2}$ wt. of superphosphate.
- 2 1wt. of superphosphate.
- 3 2cwts. of superphosphate.
- 4 3cwts. of superphosphate.
- 5 No manure.
- 6 1wt. of superphosphate and $\frac{1}{2}$ wt. of sulphate of potash.
- 7 1wt. of superphosphate and $\frac{1}{2}$ wt. of nitrate of soda.
- 8 1wt. superphosphate, $\frac{1}{2}$ wt. sulphate of potash, and $\frac{1}{2}$ wt. nitrate of soda.
- 9 No manure.

The yield secured from each for the past five seasons is set out in the following table:—

Permanent Manurial Plots—Veitch's Well, 1920-1924.

Plot.	1920.		1921.		Yield per Acre. 1922.		1923.		1924.		Means, 1920-1924.	
	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.
1	28	43	15	47	12	15	21	53	12	44	18	17
2	28	19	17	53	13	6	25	40	15	10	20	2
3	32	29	19	9	12	49	28	14	17	42	22	4
4	31	37	19	18	12	4	26	35	19	25	21	48
5	24	59	14	33	13	13	18	24	11	49	16	35
6	28	18	19	47	13	14	20	50	14	51	19	24
7	26	59	17	47	12	50	23	14	15	20	19	14
8	29	53	18	30	12	11	22	19	15	28	19	40
9	21	18	15	49	13	26	16	51	11	11	15	43

Cultivation Tests with Wheat.

A series of experimental plots, worked on the following rotation:—(1) Pasture, (2) bare fallow, (3) wheat, and designed to test different methods of cultivating bare fallow for growing wheat, was commenced in 1920. These plots are treated respectively as follows:—

Plot Treatment.

Early Fallow (June and July).

- 10 Ploughed 4in. deep and harrowed within a few days. (Cultivated whenever weeds or a crust rendered necessary.)
11. Ploughed 4in. deep, and left rough throughout the winter. (Cultivated whenever weeds or a crust rendered necessary.)
- 12 Ploughed 4in. deep, rolled within a few days, cultivated or harrowed according to circumstances. (Cultivated or harrowed whenever weeds or crust rendered necessary.)

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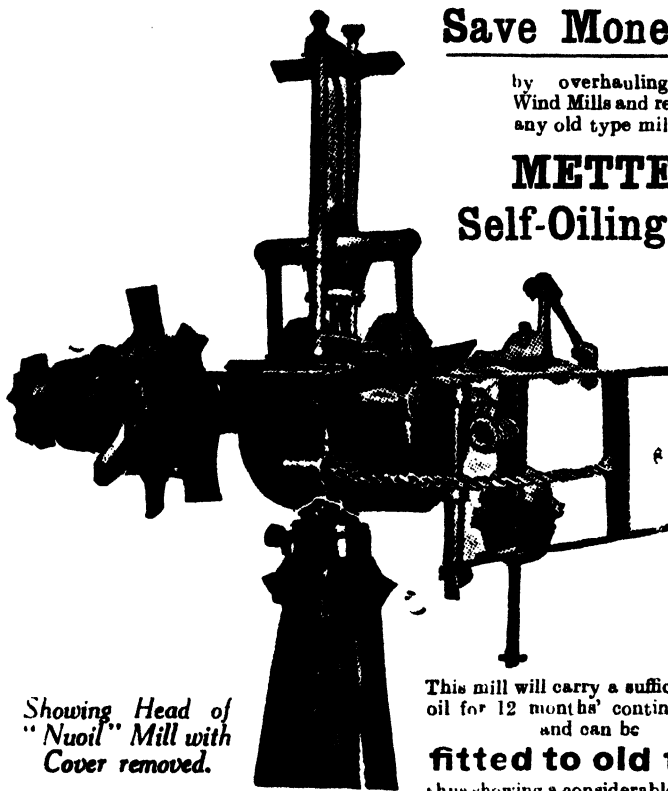
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Late Fallow (September).

- 13 Ploughed 2in. deep, and cultivated whenever a crust or weeds rendered necessary, but not rolled.
- 14 Ploughed 4in. deep, heavily rolled the same day as ploughed, and immediately harrowed. (Cultivated whenever a crust or weeds rendered necessary.)

The yields of these plots for the past five years are set out below :—

Cultivation Tests with Wheat, 1920-1924.

Plot.	Yield per Acre.										Means.	
	1920.		1921.		1922.		1923.		1924.		1920-1924.	
	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.
10	27	5	17	28	12	57	22	10	16	11	19	10
11	28	19	17	8	13	31	21	48	15	36	19	16
12	27	33	13	45	12	44	21	35	15	26	18	13
13	24	19	14	17	12	51	23	28	14	23	17	52
14	26	33	13	16	12	28	18	41	13	23	16	53

Manurial Plots with Six-rowed Barley—Veitch's Well, 1920-1924.

Nine plots are carrying barley, grown in a (1) pasture, (2) bare fallow, (3) barley rotation. The manurial treatment received by each plot is set out below :—

Plot.	Manuring per Acre.	
28	$\frac{1}{2}$ wt. superphosphate.	
27	1wt. superphosphate.	
26	2cwts. superphosphate.	
25	3cwts. superphosphate.	
24	No manure.	
23	1wt. superphosphate, $\frac{1}{2}$ wt. sulphate of potash.	
22	1wt. superphosphate, $\frac{1}{2}$ wt. nitrate of soda.	
21	1wt. superphosphate, $\frac{1}{2}$ wt. sulphate potash, $\frac{1}{2}$ wt. nitrate of soda.	
20	No manure.	

The returns from these plots are as follows :—

Manurial Tests with Barley, 1920-1924.

Plot.	Yields per Acre.										Means.	
	1920.		1921.		1922.		1923.		1924.		1920-1924.	
	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.
28	34	22	25	27	20	48	29	19	18	35	25	40
27	28	15	28	49	22	22	30	16	21	6	26	12
26	29	47	21	33	20	13	31	44	25	1	25	38
25	25	6	23	42	17	21	32	32	24	5	24	31
24	27	36	14	40	19	10	17	36	12	3	18	15
23	26	3	21	46	20	9	24	20	18	6	22	7
22	32	22	19	15	20	25	27	30	16	20	23	12
21	25	6	19	15	20	1	27	34	17	6	21	42
20	24	10	15	39	16	39	20	42	12	41	18	4

Cultivation Tests with Six-rowed Barley.

As with the manurial plots, cultivation tests on the (1) pasture, (2) bare fallow, (3) wheat rotation were duplicated with six-rowed barley as the crop, instead of the wheat.

Plot.	Treatment.
	<i>Early Fallow (June-July).</i>

- 19 Ploughed 4in. deep, and harrowed within a few days. (Cultivated whenever crust or weeds rendered necessary.)

Cultivation Tests with Six-rowed Barley—continued.

Plot. Treatment.

Early Fallow (June-July)—continued.

- 18 Ploughed 4in. deep, and left rough through the winter. (Cultivated whenever crust or weeds rendered necessary.)
- 17 Ploughed 4in. deep, rolled within a few days, and cultivated or harrowed according to circumstances. (Cultivated whenever a crust or weeds rendered necessary.)

Late Fallow (September.)

- 16 Ploughed 2in. deep, and cultivated whenever weeds or crust rendered necessary, but not rolled.
- 15 Ploughed 4in. deep, heavily rolled the same day as ploughed, and immediately harrowed. (Cultivated whenever weeds or a crust rendered necessary.)

Cultivation Tests, Barley, 1920-1924.

The yields were:—

Plot.	1920.		1921.		1922.		1923.		1924.		Means.	
	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.
19	29	10	19	34	18	39	28	16	14	36	22	7
18	26	7	18	12	16	45	25	42	16	39	20	39
17	30	41	23	29	17	0	26	19	19	23	23	22
16	34	8	20	17	19	7	26	44	20	38	24	13
15	30	3	20	19	18	45	27	2	19	49	23	14

Rate of Seeding Tests with Wheat.

A block of land in a fallowed field has during each of the past ten years been divided into plots, each of which has received a dressing of 1cwt. of superphosphate per acre, but a different quantity of seed wheat. The same variety of wheat was sown on all plots in each individual year, and other than the amount of seed used on the plots, their treatment has been identical. The results obtained over this period, 1915-1924, are set out in the following table:—

*Quantitative Seed Tests—Veitch's Well, 1915-1924.**(Tests on Wheat Sown with 1cwt. Superphosphate per Acre.)*

Year.	30lbs. Wheat.		45lbs. Wheat.		60lbs. Wheat.		80lbs. Wheat.		Total "Useful"	
	B.	L.	B.	L.	B.	L.	B.	L.	Rainfall.	Rainfall.
1915	9	47	10	9	10	45	9	57	9.83	8.79
1916	18	9	19	1	19	5	18	39	16.69	15.29
1917	22	53	23	24	23	56	26	31	16.60	11.56
1918	7	20	8	39	8	53	8	41	9.20	8.41
1919	7	21	7	20	7	51	8	34	13.24	5.16
1920	24	56	25	49	25	12	27	29	15.50	13.76
1921	17	13	19	31	19	16	18	31	12.36	8.24
1922	17	22	17	26	17	21	17	37	10.28	8.69
1923	17	35	17	22	15	18	14	17	13.33	11.75
1924	9	12	10	22	11	12	11	9	12.45	7.97
Means	15	11	15	54	15	53	16	9	12.95	9.96

Although the differences between the means over a period are not very marked, the results are sufficient to show that the 45lbs. seeding is the best under these conditions, and that to use below this amount is not wise.

Rate of Seeding Tests with Barley.

Tests are being carried out with various quantities of barley seed per acre on land treated with 1cwt. of superphosphate per acre. Apart from the amount of seed used the treatment of these plots was identical.

The yields obtained for the last three years are set out in the following table:—

Quantitative Seed Tests—Veitch's Well, 1922-1924.

(Tests on Barley Sown with 1cwt. Superphosphate per Acre.)

	20lbs. Barley.		30lbs. Barley.		40lbs. Barley.		50lbs. Barley.	
	B.	L.	B.	L.	B.	L.	B.	L.
1922	4	33	5	5	6	28	8	23
1923	21	48	25	26	20	33	24	8
1924	12	0	13	19	13	0	12	47
Means	12	44	14	33	13	20	15	9

These tests have only been conducted for three years. This is not sufficient to enable one to determine which will be the most profitable rate of seeding.

Fertiliser Tests—Ephos Basic Phosphate, Triple Superphosphate, and 36 per cent. Superphosphate.

The relative merits of different types of phosphates have been tested for the first time this year.

The same quantity and variety of wheat has been used in each case. The manurial dressing received by each plot, and the yield, are set out in the following table:—

Plot.	Fertiliser per Acre†	Yield per Acre.	
		B.	L.
1. 1cwt. 36 per cent. superphosphate		18	56
2. No manure		15	36
3. 38½lbs. Triple superphosphate*		20	4
4. 66lbs. Ephos basic phosphate*		15	45
5. 2cwts. 36 per cent. superphosphate		20	52
6. No manure		15	18
7. 77lbs. Triple superphosphate†		21	32
8. 132lbs. Ephos basic phosphate†		11	2

The particularly low yield of Plot No. 8 is attributed to a great extent to it being cut off by drift sand.

* Equivalent to the amount of phosphoric acid contained in 1cwt. superphosphate.

† Equivalent to the amount of phosphoric acid contained in 2cwts. superphosphate.

WHEAT DISEASES.

Much of the loss which occurs annually through the development of fungus diseases in wheat crops can be prevented, and a knowledge of the nature of the different diseases, and of proved methods of control, should materially assist farmers to this end. To enable them to secure this knowledge, the Department of Agriculture has just issued a bulletin describing the life history and methods of treating the principal diseases of wheats met with in this State. In this bulletin, written by the Chief Agricultural Instructor (Mr. W. J. Spafford), the diseases dealt with are "bunt," "loose smut," "flag smut," "take-all," "footrots," "red rust," and "wheat mildew." The nature of the contents of the bulletin may perhaps be best judged by the following summary:—

1. The fungus diseases are the result of small plants (the fungi) living on the sap of the host plants.

2. The spores of the wheat smuts germinate at the same time as the wheat by sending out threads, which enter the young wheat plant and grow up with it, and later produce a large collection of brownish-black powder in some part of the wheat plant, usually in the ear.

"Bunt" or "Stinking Smut."

3. The spores of "bunt" take the place of the whole of the affected grains, except the outside skin.

4. The wheat crops are infected by the "bunt" spores lodging on the grain, and thus being sown with the seed.

5. The only practicable method of eradicating or checking "bunt" is by treating the seed with a fungicide.

6. A 1 per cent. solution of copper sulphate is a proved farmer's method of treatment.

7. For best results this solution should be poured on heaps of loose wheat on a floor and mixed with shovels until the grain is thoroughly wet.

8. A $\frac{1}{4}$ per cent. solution of standard formalin is a good pickle, provided the grain is sown whilst still damp.

9. If seed wheat is thoroughly dusted with copper carbonate, containing 50 per cent. to 55 per cent. metallic copper, which is so finely ground that 90 per cent. of it will pass through a 200-mesh screen, "bunt" is controlled fairly well. Each bushel of seed requires 2oz. of finely powdered copper carbonate.

"Loose Smut."

10. The spores of "loose smut" take the place of the whole of affected heads except the central stalks.

11. The grain is infected with this disease by the spores dropping on the ovary, growing into it, and remaining in a resting stage until the grain germinates.

12. This disease at present does so little damage to our crops that it is not worth the expense of specially treating the seed; but should it ever become bad enough to warrant it, immersion in water at 110deg. to 115deg. Fahr. for three hours will check it.

"Flag Smut."

13. The spores of "flag smut" are produced on the leaves of the wheat plant, and the plants affected are usually so much weakened by the attack that they are unable to produce grain.

14. The wheat crops are infected by this disease through the soil, the spores finding their way there by dropping before the crop is harvested, and by straw or manure from affected crops being ploughed in.

15. As a means of prevention the stubble of affected crops should be burnt, land should be fallowed early, crops should not be sown early on affected soil, and only resistant varieties should be sown.

"Take-all" and "Foot-rots."

16. "Take-all" and "foot-rots" are characterised by the presence of dark powder or stain at the base of affected straws.

17. Infection with this disease appears to come wholly from the soil, particularly from the straw of affected plants.

18. As preventive measures the stubble from affected crops should be burnt, land should be bare fallowed early and worked well to keep it free from weeds. Oats should be used as a change crop with wheat on land that has shown signs of the disease. Good mechanical condition of the soil at seeding time should be aimed at, so that the young wheat plants are strong enough to grow away from the parasite. Rolling the land heavily should be resorted to whenever it is doubtful if the under-surface is well compacted together. "Late" seeding with resistant varieties should be practised.

"Red Rust."

19. "Red rust" is characterised by affected wheat plants showing longish patches of iron-rust red powder on leaves, sheaths, and even stem and ear, from heading time until drying or ripening.

20. The mode of infection by "rust" is not yet thoroughly understood, but it appears likely that attacks are started by uredospores being blown from district to district or country to country by winds.

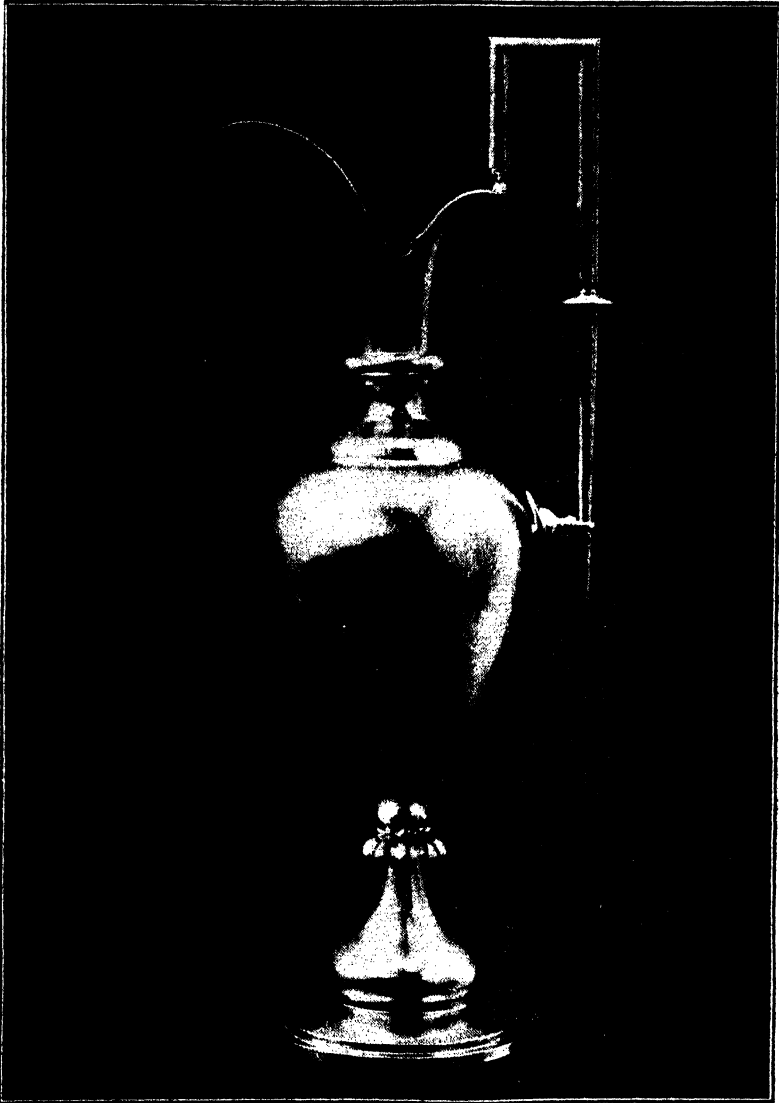
21. The only known method of preventing this disease is by using "rust" resistant and "rust" escaping varieties of wheat.

"Wheat Mildew."

22. This disease attacks the base of the stems and bottom leaves of the growing wheat plant and is characterised by a more or less powdery mass of ashy grey to pinkish color on the plants.

23. The chances are that infection comes from the soil by affected matter being ploughed in and by the disease being continued on other grasses.

24. Known methods of prevention are burning straw of affected crops, keeping fallows free from weeds, feeding off affected patches, and draining low-lying spots in the fields.



At the annual conference of Eyre Peninsula Branches of the Agricultural Bureau, held at Minnipa in 1924, it was decided that a wheat crop competition, open to growers in the county Le Hunte, should be inaugurated during 1925. As an award, a handsome silver cup, depicted above, has been donated by the H. V. McKay Proprietary Ltd., the well-known manufacturers of "Sunshine" machinery. This cup will become the property of the wheatgrower who secures the highest aggregate of points in the competition during the seasons 1925, 1926, and 1927.

RIVER MURRAY PRUNING COMPETITIONS.

Pruning competitions are held annually along the River Murray, under the auspices of the Agricultural Bureau of South Australia. The competitions were inaugurated in 1921, and each year are held at the following centres:—Mypolonga, Cadell, Waikerie, Berri, Moorook, and Renmark. The competitions are separated into two sections, vines and trees, divided respectively into the following classes:—Vines—Doradillo, currant, and sultana; and trees—Apricot, peach, and pear.

The first of the 1925 series took place at Mypolonga on Thursday, July 2nd, in the orchards of Messrs. G. Heddle and E. Petney. Visitors and members from the Murray Bridge, Pompoola, and Mypolonga Branches to the number of about 80, were present. Included in the gathering were Messrs. F. Staniford and H. D. Young, M's.P., C. G. Savage (Deputy Horticultural Instructor and Manager of the Berri Orchard), E. Leishman (District Orchard Instructor and Inspector), and F. C. Richards (Assistant Secretary of the Advisory Board of Agriculture). Mr. C. G. Savage adjudicated and Mr. E. Leishman acted in the capacity of consulting judge. Ten entries were received for the vine section, and in the tree section 16 competitors faced the judges.

VINE SECTION AWARDS.

In the currant division the maximum award was 90 points, 72 being required for a certificate. The following points were awarded:—J. Hocking 76, B. Edson 74, W. Noles 72, A. Traeger 71, H. Anderson 71, A. Hilton 71, H. Prosser 69, A. Burrett 68, J. Victory 67, B. Potter 66. *Sultana Division*, maximum points 120, 96 being required to gain a certificate. Results:—J. Hocking 114, B. Edson 110, B. Potter 96, A. Burrett 92, A. Hilton 89, W. Noles 88, J. Victory 87, H. Prosser 85, A. Traeger 81, H. Anderson 81. *Doradillo*, maximum points 90, 72 points being required to gain a certificate. Results:—J. Hocking 78, A. Traeger 77, A. Hilton 74, W. Noles 72, H. Prosser 72, J. Victory 67, B. Potter 67, B. Edson 66, A. Burrett 66, H. Anderson 66. Of the above, Messrs. J. Hocking, B. Edson, and W. Noles, with 268, 250, and 232 points respectively, are eligible for the Championship Competitions, which will be held at Waikerie on Thursday, July 16th.

TREE SECTION AWARDS.

In the apricot division, 90 points was the maximum award, 72 being required to gain a certificate. The results were as follows:—B. Edson 78, J. Hocking 75, K. Dowding 75, H. Hill 75, W. Noles 75, A. Hilton 72, H. Anderson 70, A. Burrett 70, J. Victory 69, H. Pearce 68, H. Prosser 68, N. Angrave 68, B. Potter 68, A. Angrave 67, S. Doe 67, A. Starr 64. *Peach Division*, maximum points 120, 96 points required to gain a certificate. Results:—A. Hilton 104, K. Dowding 98, W. Noles 98, B. Edson 94, H. Anderson 93, J. Hocking 92, W. Hill 92, N. Angrave 91, A. Angrave 90, A. Burrett 89, H. Prosser 89, H. Pearce 88, J. Victory 88, B. Potter 88, S. Starr 87. S. Doe retired with a cut

hand. *Pear Division*, maximum points 90, to gain a certificate 72 were necessary. Results:—K. Dowding 74, B. Potter 73, B. Edson 73. H. Anderson 72, W. Noles 72, H. Pearce 72, A. Burrett 72, N. Angrave 70, J. Hocking 70, A. Angrave 70, A. R. Hilton 69, J. Victory 68, S. Starr 68, W. Hill 68, H. Prosser 67, H. Anderson 65.

In the tree section, Messrs. K. Dowding 247 points, W. Noles 245, A. Hilton 245, and B. Edson 245, therefore, qualify for the Championship Competition.

JUDGES' COMMENTS.

In commenting on the work of the competitors, Mr. Savage said both in the bush and currant divisions of the vine section, the pruners had a difficult task, because of the condition of the vines. The currants had been over-cinctured, and bunches of water shoots and many suckers arose from the stem. Competitors showed a marked improvement on last year's work, especially in the bush and sultana division. The general pruning was of a higher standard than had been the case previously. The greatest fault in the sultana section was the selection of water shoots that were used for fruiting canes, and also the tendency of some of the pruners to extend the permanent arms too long. In the case of the sultana, difficulty was also experienced on account of the cold weather, which caused pruners very considerable trouble in twisting the rods satisfactorily. Neither were the rods spaced to advantage, overcrowding was too much in evidence. In the tree section, competitors first had to deal with the apricot. Mr. Savage, in discussing the work, said many pruners treated the fruit wood of the apricot in the same way as that recommended for the peach. They cut out many older fruiting spurs, evidently to try and refurnish with new wood, where they should have reduced back the subdivision of the fruit wood. Towards the top of the tree, competitors did not show discretion. The spurs were overcrowded, with the result that next summer many of the shoots would die out through lack of light. In the peach division, a lack of knowledge was shown in not refurnishing the tree with new fruit wood. Provision was not made for refurnishing and reducing back some of the shoots to the base bud. From those base buds should arise during the next summer fruit shoots, which could be utilised to carry the subsequent crop. Overcrowding on the tops of the trees was also in evidence in much of the work. In both the tree and vine sections, one of the chief faults was rough cutting, and in the case of the vines, the non-removal of base buds where shoots were removed. From those base buds during the coming summer would develop undesirable water shoots. The best work of the day, said Mr. Savage, was done in the pear division, and that was largely due to the splendid types of trees with which the competitors had to deal. At the conclusion of the competition, a hearty vote of thanks, moved by Mr. W. Knightly and seconded by Mr. H. D. Young, M.P., was accorded to the Judges, Messrs. Savage and Leishman.

MOUNT GAMBIER HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR MAY, 1925.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during May.	Per Cow during May.	Per Cow August to May.	Per Herd during May.	Per Cow during May.	Per Cow August to May.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
2/K	22.52	19.65	9,707.5	431.06	5,609.81	391.93	17.40	232.92
2/L	21	12.03	6,721	320.05	4,879.80	314.67	14.98	219.68
2/Y	14	9.23	5,808	414.86	6,666.35	232.73	16.62	268.83
2/DD	20.10	15.52	9,063.5	450.92	6,971.18	363.49	18.08	294.32
2/E	15.55	12.26	4,991	320.96	6,170.56	243.25	15.64	275.11
2/F	10.65	7.29	4,055	380.75	7,505.24	175.30	16.46	313.42
2/G	12	6.90	4,156	346.33	4,930.44	209.76	17.48	209.05
2/H	10	7.90	4,557.5	455.75	6,454.62	194.87	19.49	259.96
2/I	12.71	10.71	5,589	439.75	6,501.92	254.37	20.01	282.55
2/J	27	17.65	9,351.5	346.85	4,253.83	393.89	14.61	165.34
Means	16.55	11.91	6,400.00	386.63	5,707.98	277.43	16.76	238.96

RIVER MURRAY HERD TESTING ASSOCIATION.

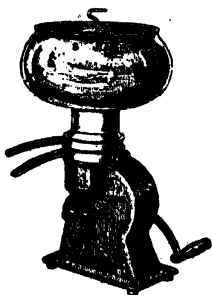
RESULTS OF BUTTERFAT TESTS FOR APRIL, 1925.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during April.	Per Cow during April.	Per Cow October to April.	Per Herd during April.	Per Cow during April.	Per Cow October to April.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1/J	14	12.10	8,991	642.21	3,955.20	384.78	27.48	187.80
1/L	16.13	11.70	7,404.5	488.48	3,735.39	332.80	22.03	162.48
1/M	15	13.63	8,321.5	554.77	4,239.19	453.96	30.26	223.73
1/E	24	20.97	13,894	578.92	4,219.67	589.34	24.56	180.38
1/G	22.97	20.87	16,843.5	733.28	5,633.27	722.22	31.44	226.71
1/X	18.50	17.37	10,095.5	545.70	4,806.32	487.08	26.33	208.81
1/F	18.63	14	6,466	347.02	3,738.83	297.54	15.97	168.56
1/I	31.73	24.10	19,243.5	606.48	4,607.26	871.42	27.46	206.07
1/M	19	7.47	4,404	231.79	2,152.06	207.00	10.89	98.30
1/N	16	13	7,980	498.75	5,013.32	333.17	20.82	201.14
1/O	15.40	13.60	8,397	545.26	4,308.01	377.64	24.52	193.85
1/P	24.57	21.23	13,483.5	548.78	3,834.30	547.08	22.27	146.76
1/Q	21.63	15.20	7,209	333.28	1,447.32	329.62	15.24	66.81
Means	19.81	15.79	10,210.23	515.35	3,955.67	456.43	23.04	174.27

NARRUNG HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR APRIL, 1925.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during April.	Per Cow during April.	Per Cow October to April.	Per Herd during April.	Per Cow during April.	Per Cow October to April.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
5/A	81-93	58-10	16,515	201-57	2,132-02	767-17	9-36	100-39
5/B	30	22-93	13,100-5	436-68	3,586-66	622-95	20-77	175-15
5/C	27-37	14-80	8,345-5	304-91	3,706-63	436-20	15-94	176-47
5/D	38	27-93	17,398	457-84	2,431-03	851-79	22-42	123-63
5/E	52-63	40-07	16,281-5	309-36	2,904-99	780-88	14-84	137-02
5/F	25-27	23-33	9,612	380-37	4,086-61	485-72	19-22	183-42
5/G	22-67	13-63	4,759	209-92	2,934-65	235-00	10-37	137-30
5/H	38	18-27	8,274-5	217-75	1,837-55	410-40	10-80	96-91
5/I	35-70	25-27	12,781-5	358-03	2,899-45	649-07	18-18	134-52
5/J	36-43	28-30	17,775	487-92	2,558-34	779-78	21-40	118-01
5/K	47-67	33	21,253	445-84	2,555-93	1,085-13	22-76	123-02
5/L	34	20-37	13,486-5	396-66	2,545-26	610-87	17-97	117-88
5/M	22	11-23	5,507	250-32	2,258-81	243-33	11-06	105-75
5/N	32-50	26-37	8,831-5	256-35	3,554-91	456-71	14-05	167-30
5/O	41	32-43	13,238	322-88	2,948-43	627-91	15-31	131-92
5/P	36	28-93	13,010-5	353-17	2,881-21	620-73	16-85	139-04
5/Q	27	16-33	5,272-5	195-28	2,689-53	261-17	9-67	134-10
5/R	78-17	54-63	14,071	180-00	1,887-42	780-75	9-99	90-32
5/S	38-13	30-10	11,210-5	294-00	2,071-37	522-83	13-71	95-94
Means	39-18	27-69	12,143-32	309-91	2,639-11	590-97	15-08	125-31



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GLENCOE HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR APRIL, 1925.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during April.	Per Cow during April.	Per Cow October to April.	Per Herd during April.	Per Cow during April.	Per Cow October to April.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
3/A	19	14.80	9,355	492.37	5,343.13	333.59	20.19	215.33
3/B	13	11	3,945	303.46	3,391.29	205.36	15.80	145.53
3/C	11.87	9.73	4,826	406.53	4,755.54	219.74	18.52	188.73
3/D	9.47	8.10	5,043	532.52	4,862.25	201.00	21.22	175.44
3/E	13	12.57	6,517	501.31	5,131.52	303.08	23.31	217.46
3/G	12	8.40	3,826	318.83	3,945.22	163.36	13.61	148.60
3/I	11.17	9.50	4,450	398.38	4,392.39	222.94	19.96	182.33
3/J	17.73	14.60	2,703	152.45	3,277.20	166.46	9.39	139.05
3/K	25.73	25.30	10,900.5	423.65	3,970.85	479.16	18.62	170.90
3/L	23	12.90	5,397	234.65	3,163.29	233.13	10.14	132.55
3/M	12	9.67	2,659.5	221.63	3,293.79	143.29	11.94	140.36
3/N	21.80	18.20	7,750	355.50	4,126.83	370.52	17.00	177.24
3/O	16	15.30	4,402	275.12	3,826.24	208.94	13.06	155.22
3/P	17	14.67	1,972	116.00	3,796.81	112.66	6.63	150.37
3/Q	39.60	28.40	7,557	190.83	3,247.16	327.52	8.27	140.60
3/R	17.37	15.27	8,560	492.80	4,793.20	452.62	26.06	219.91
3/T	20	16.17	4,066	203.30	4,555.37	188.18	9.41	193.67
3/U	23.93	18.13	6,987	291.97	3,537.15	311.45	13.02	144.76
3/V	17	13.63	3,268	192.23	3,177.40	157.36	9.26	132.64
Means	17.93	14.54	5,483.37	305.82	3,969.07	255.28	14.24	165.46

THE AGRICULTURAL OUTLOOK.

REPORT FOR THE MONTH OF JUNE, 1925.

The following report on the general agricultural condition and outlook of the area represented by the Government Experimental Farm mentioned below has been prepared by the manager:—

Booborowie.—Weather—The weather for June has been fairly fine and frosty; 98 points of rain have been registered up to the 26th. Crops—The crops are all germinating nicely. Natural feed is fairly abundant. Stock—All stock are in good condition and healthy. Pests—There are no pests worth mentioning. Miscellaneous—Farmers have finished seeding in most cases, and fallowing will soon be commenced.

MILANG HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR APRIL, 1925.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during April.	Per Cow during April.	Per Cow May to April.	Per Herd during April.	Per Cow during April.	Per Cow May to April.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
4/A	26	17.47	10,981.5	422.36	4,607.19	518.36	19.94	204.68
4/B	37.93	19.47	9,430.5	248.63	4,422.29	445.00	11.73	180.06
4/C	30	28.47	11,411.5	380.38	4,671.30	509.82	16.99	196.05
4/D	21	5.50	3,228	153.71	6,769.19	122.76	5.84	262.86
4/E	20.90	3	1,185	56.70	3,829.67	53.58	2.56	148.79
4/F	20	15.93	9,299	464.95	4,903.08	445.72	22.29	214.48
4/G	26.97	11	4,756.5	176.36	4,180.59	225.89	8.38	171.63
4/H	31	16.50	6,488	209.29	4,995.45	297.02	9.58	208.52
4/I	30.90	17.33	7,541.5	244.06	4,592.45	363.97	11.78	207.17
4/J	56	32.23	11,848.5	211.58	4,996.53	499.03	8.91	193.10
4/K	16	11.53	3,958	247.38	4,626.31	180.94	11.31	207.16
4/L	34.83	28.03	13,461	386.48	4,643.80	682.44	19.59	222.01
4/M	21	11.60	2,494.5	118.89	4,207.26	101.84	4.84	168.96
4/N	38.57	17.13	13,783.5	357.66	5,376.85	554.70	14.39	212.94
4/O	43.03	10.03	6,343	147.41	5,749.48	286.42	6.66	237.93
4/P	60	30.13	4,413	78.55	2,742.50	202.18	3.37	107.98
4/Q	49	39.63	18,641	380.43	5,481.90	816.19	16.66	222.33
4/R	15.87	3.93	855	53.88	5,312.99	46.53	2.93	248.71
Means	32.17	17.72	7,784.39	242.00	4,751.44	353.02	10.98	197.68

COWS YIELDING 1,000GALLS. OF MILK OR 400LBS. OF BUTTERFAT IN A LACTATION PERIOD.

Name of Cow.	Owner.	No. of Days.	Milk.	Butterfat.
			Galls.	Lbs.
Lossie (Jersey).....	M. S. Cheetham	319	912.70	452.31
Judy (Grade Jersey)....	M. S. Cheetham	319	695.20	423.16
Beauty (Shorthorn)	R. W. Ellis	319	1,040.65	413.15
Maud (Shorthorn)	R. W. Ellis	319	1,011.05	385.09
Cherry (Shorthorn).....	R. W. Ellis	319	1,003.75	420.52
Marge (Shorthorn)	R. W. Ellis	319	938.35	411.07
Tiger (Crossbred).....	R. W. Ellis	284	913.75	434.31
Tiny (Crossbred).....	R. W. Ellis	310	998.90	440.66
Polly (Grade Jersey)....	H. C. Prosser	319	830.95	465.39
Snowy	J. Dillon	319	865.55	406.58
Ring (Jersey)	A. J. Riddle	309	924.05	424.72
Judy (Grade Shorthorn)..	G. G. Hall	319	1,005.60	424.51
Cudlee (Shorthorn Cross).	H. H. Clark	319	969.05	482.92

OFFICIAL PURE-BRED HERD TESTING.

PURE-BRED COWS WHICH HAVE COMPLETED OFFICIAL TESTS DURING PERIOD JULY 1st, 1924, TO JUNE 30th, 1925.

Herd Book No.	Cow's Name.	Breed.	Owner.	Total Milk.	Total Butter-fat.	Age at Date of Calving.	Standard
				Lbs.	Lbs.	Yrs. Dys.	
12,789	Star 6th of Darbala.	M/S'horn	Commyns, J., Murray Bridge	7,147½	309.35	2 351	225
11,031	Biddy 12th of Darbala	"	"	7,242	287.53	3 32	250
4,760	Melfort's Majesty.	Jersey	Cowan, L. T., Littlehampton	9,378	483.11	8 148	350
6,619	Duchess 3rd of Dalebank.	"	"	8,347½	402.77	7 233	350
6,624	Lady Grey of Dalebank	"	"	7,593	396.41	6 72	350
8,269	Viola of Dalebank	"	"	6,723	381.18	3 349	275
8,263	Lassie of Dalebank	"	"	7,413	378.73	4 340	325
6,620	Fredly of Dalebank	"	"	6,823½	357.03	5 355	350
10,531	Milkmaid of Dalebank	"	"	7,473	356.85	3 13	250
8,339	Carnation of Dalebank	"	"	7,020	351.07	4 98	300
8,262	Lacy 2nd of Dalebank	"	"	8,106	342.90	4 264	325
4,256	Clematis	"	"	6,294	329.84	9 330	350
10,576	Columbine of Dalebank	"	"	5,622	329.19	3 124	250
11,818	Anemone of Dalebank	"	"	4,449	242.25	1 332	200
10,578	Lotus of Dalebank	"	"	4,479	237.96	2 106	200
11,314	Iris of Dalebank	"	"	4,483½	204.71	2 1	200
11,821	Lady McEwin of Dalebank	"	"	3,502½	193.02	1 356	200
12,250	Carrie 2nd of Stonyfell.	Jersey	Crompton, R. and T. E., Magill	5,214	295.65	1 344	200
11,325	Kate 3rd of Stonyfell	"	"	4,903½	287.06	2 326	225
4,436	Sweet Lotus	Jersey	Eckermann, W. P., Eudunda	8,023½	414.03	9 8	350
8,319	Jessica's Maid of Merildon	"	"	7,098	365.06	8 135	350
8,375	Princess Lotus of Elim	"	"	6,025½	358.86	4 264	325
8,374	Carmen of Pella.	"	"	6,357	357.71	3 355	275
6,766	Queen of Pella	"	"	7,608	354.52	6 189	350
10,056	Lindors of Merildon	"	"	5,737½	341.06	6 56	350
8,371	Jean Kelly of Sunny Vale	"	"	5,332½	331.74	4 267	325
10,595	Princess Audrey of Pella	"	"	6,094½	318.34	2 333	225
6,763	Lassie Grey of Linden	"	"	6,547½	304.20	7 88	350

PURE-BRED COWS WHICH HAVE COMPLETED OFFICIAL TESTS, &c.—continued.

Herd Book No.	Cow's Name.	Breed.	Owner.	Total Milk.	Total Butter-fat.	Age at Date of Calving.	Standard.
				Lbs.	Lbs.	Yrs. Dya.	
531	Holland Queen's Diamond	Friesian.	Hannaford, F. E., Murray Bridge	16,576½	559-10	7 160	350
1,060	Rosey 60th of Lilydale	"	"	11,407½	389-33	2 322	225
1,381	Monovale Tertie Paxton	"	"	8,481	309-81	5 75	350
	Rosevale Martha Fosch	"	"	6,480	268-18	3 134	250
1,250	Domino's Friesland Belle	Friesian.	Henley Stud Friesians, Ltd., Fulham	17,227½	601-73	11 141	350
393	Woodcrest Maid	"	"	13,962	494-63	6 110	350
1,255	Butchland Konigen Maid Ormsby	"	"	12,963	474-73	5 221	350
1,226	Buttercup 3rd of Ashlynn	"	"	12,243	455-86	8 226	350
1,328	Longbeach Crimson Rambler	"	"	14,247	439-88	10 —	350
202	Monovale Rita Paxton	"	"	12,220½	416-84	7 110	350
454	Woodcrest Domino Queen	"	"	13,182	413-30	6 209	350
11,550	Lady Grey 9th of Penrhyn	Jersey	Laughton, H., Hilton	7,518	393-90	4 272	325
3,687	Lady Hernia 3rd	"	"	6,583½	324-58	14 314	350
11,557	Rosebud 5th of Penrhyn	"	"	5,545½	318-07	5 190	350
11,556	Rhodora 6th of Penrhyn	"	"	5,793	297-09	5 35	350
11,553	Lady Marge 5th of Penrhyn	"	"	5,320½	292-84	2 346	225
6,052	Rosebud 3rd of Penrhyn	"	"	5,535	289-07	10 79	350
11,549	Christobel 8th of Penrhyn	"	"	4,296	236-05	2 89	200
11,554	Lady Marge 6th of Penrhyn	"	"	4,434	227-61	2 308	225
8,345	Kate 2nd of Stonyfell	Jersey	Malthouse, J., Nth. Walkerville	9,423	536-32	4 275	325
7,535	Skylee of Linden	"	"	9,370½	482-41	7 163	359
2,829	Cymbal	"	"	6,316½	353-53	12 342	350
13,253	Maid of Ingleswood	"	"	6,388½	334-82	2 314	225
12,253	Cheverette of Waterfall	"	"	4,744½	256-08	2 31	200
800	Netherland Duchess of Lydholme	Friesian.	Mountstephen, H., Monteth	10,455	385-54	3 315	275
11,653	Gayboy's Sunflower of Wangarra	M/S'horn	Muirhead and Butler, Hansborough	6,363	244-53	4 86	300
10,417	Princess 3rd of Wangarra	"	"	5,190	219-20	5 119	350
11,993	Lovey 2nd of Arrawatta	"	"	5,106	208-53	5 200	350
12,888	Triumph's Tot of Wangarra	"	"	4,905	177-56	3 235	275
11,646	Gayboy's Dora of Wangarra	"	"	4,332	162-46	3 59	250
12,078	Damsel 3rd of Brinkley	Jersey	McAuliffe Bros., Endunda	6,642	373-34	2 276	225

PURE-BRED COWS WHICH HAVE COMPLETED OFFICIAL TESTS, &c.—continued.

Herd Book No.	Cow's Name.	Breed.	Owner.	Total Milk.		Total Butter-fat.		Age at Date of Calving.		Standard.
				Lbs.	Lbs.	Lbs.	Lbs.	Yrs.	Dys.	
5,401	Pimpernel of Springhurst	Jersey	Neumann, B. G., Hampden	11,229	504-12	504-12	504-12	8	110	350
7,219	Doris of Kiams	"	"	7,533	421-73	421-73	421-73	5	354	350
8,410	Lily of Grantals	"	"	5,529	325-06	325-06	325-06	4	52	300
8,413	Jenny of Grantals	"	"	5,458½	317-16	317-16	317-16	5	100	350
11,656	Carnation of Oakhill	"	"	4,983	298-47	298-47	298-47	2	210	225
14,312	Pimpernel 2nd of Oakhill	"	"	5,349	297-49	297-49	297-49	2	40	200
5,401	Pimpernel of Springhurst	"	"	6,129	293-29	293-29	293-29	7	134	350
8,410	Lily of Grantals	"	"	4,468½	277-49	277-49	277-49	3	91	250
14,310	Carnation 2nd of Oakhill	"	"	3,910½	236-83	236-83	236-83	1	292	200
8,417	Mayflower of Grantals	Jersey	Pitzner, J. A. J., Hampden	6,520½	409-19	409-19	409-19	4	151	300
8,933	Jane of Koorali	"	"	6,489	348-34	348-34	348-34	3	263	275
7,267	Rhododa of Hampden	"	"	6,045	330-68	330-68	330-68	6	181	350
4,564	Violet 8th of Kingsvale	"	"	6,882	325-50	325-50	325-50	9	128	350
7,317	Maggie of Grantals	"	"	5,589	320-64	320-64	320-64	6	252	350
9,510	Thora 9th of Banyule	"	"	6,340½	317-24	317-24	317-24	4	322	325
8,415	Dorothy of Grantals	"	"	4,864½	294-53	294-53	294-53	3	210	275
12,843	Mariposa of Hampden	"	"	4,636½	297-90	297-90	297-90	2	13	200
8,416	Olive of Grantals	"	"	5,364	297-55	297-55	297-55	3	270	275
12,843	King's Violet of Hampden	"	"	4,426½	234-51	234-51	234-51	1	347	200
6,550	Bohemian Maid of Linden	Jersey	Rodda, W. A., Fullarton	5,232	281-37	281-37	281-37	4	350	325
13,432	Mantelini of Ingleswood	"	"	5,268	258-82	258-82	258-82	2	261	225
10,389	Dunallister Manakin's Northwood Morocco	"	"	4,312½	238-65	238-65	238-65	2	213	225
6,325	Buttermilk of Plympton	"	"	3,964½	218-98	218-98	218-98	12	307	350
8,424	Grey Bird of Waterfall	Jersey	Scarfe, Miss E. D., Marryatville	5,434½	305-66	305-66	305-66	7	323	350
10,598	Jessamine of Merildon	Jersey	Traeger, E. O., Eudunda	6,207	364-55	364-55	364-55	4	74	300
12,079	Beauty of Sunmyvale	"	"	4,587	280-04	280-04	280-04	2	256	225
12,090	Lobella of Sunmyvale	"	"	4,060½	253-55	253-55	253-55	2	215	225
12,079	Beauty of Sunmyvale	"	"	3,444	207-59	207-59	207-59	1	305	200
7,519	Anemone 2nd of Warragebours	Jersey	Walsh, H. R., North Walkerville	5,649	301-81	301-81	301-81	8	242	350
13,245	Damsel of Brinkley	"	"	6,549	299-08	299-08	299-08	3	21	250

DAIRY AND FARM PRODUCE MARKETS.

A. W. Sandford & Co., Limited, reported on Wednesday, July 1st, 1925:—

BUTTER.—Throughout the month under review substantial importations from the eastern States had to be made to supply local trade, but these purchases ceased as soon as this State became self-supporting with supplies of choicest-quality butter. Several fluctuations have taken place with values of all grades, but with top grades the lowering was done to enable this State to unload its surplus to Western Australian buyers. The local demand has been exceptionally brisk, and with consignments of private separators and dairies and store and collectors' lines being short of trade wants, good values were obtainable. Choicest factory and creamery fresh butter, in bulk, 1s. 5½d.; first grade, 1s. 2½d.; second and third grades, 1s. 0½d. to 1s. 1d.; best separators and dairies, 1s. 2½d. to 1s. 5d.; fair quality, 11½d. to 1s. 2d.; stores and collectors', 11d. to 1s. 2d.; stale lots down to 10d. per lb.

EGGS.—For several markets the demand exceeded the forwardings, and prices naturally advanced, but as a result of the mild weather experienced during the middle of the month, supplies rapidly increased, and values receded so as to enable interstate buyers to operate on this market. Fresh hen, 1s. 5½d.; duck, 1s. 6½d. per dozen.

CHEESE.—Rather unexpectedly Sydney merchants were very keen buyers for newly-made cheese, at advanced rates compared with last month's. In fact, there was a shortage in supplies coming forward from the South-Eastern factories, in both local and interstate trade. However, supplies are now increasing, and although values are unaltered, it is expected that the market will record a slight lowering so as to compete with the quotations being received in Western Australia from interstate sellers; the range for new makes being from 10½d. to 11½d. per lb. for large to loaf; semi-matured and matured cheese, 10d. to 11d. per lb. for large to loaf; 11lb. cheese, 1s. 3d. to 1s. 3½d. per lb.; dwarf size, 1s. to 1s. 0½d. per lb.

HONEY.—Until recently the heavy stocks of all grades of honey were very slow of sale, but fair clearances have been made with orders received from Western Australian and Victorian purchasers. This refers to top grades, but sales of lower grades are negligible. Prime clear extracted in liquid condition, 3½d.; best quality candied lots, 3d.; lower grades down to 2d. Beeswax saleable at 1s. 3d. to 1s. 4d. per lb., according to sample.

ALMONDS.—The substantial forwardings arriving daily were readily cleared by the keen purchases of local and interstate merchants at unaltered values. With kernels, the supplies, although heavy, met with exceptionally brisk demand, and values recorded an advance of 1d. per lb. Brandis, 9½d. to 9½d.; mixed softshells, 8½d. to 8½d. per lb.; hardshells, 4½d.; kernels, 2s. 2½d.

BACON.—Although ample stocks were available from local curers during the period under review, heavy importations from the eastern States came along and had the effect of reducing values. The lower prices to some extent stimulated the demand, and heavy output was experienced, especially with sides and hams. At the end of the month the following values ruled:—Hutton's "Pineapple" brand sides, 1s. 1½d.; best factory cured middles, 1s. 3d.; Hutton's "Pineapple" brand rolls, 1s. 1½d. to 1s. 2d.; Hutton's "Pineapple" brand hams, 1s. 7d.

LARD.—Hutton's "Pineapple" brand, in packets, 9d.; in bulk, 8d. per lb.

LIVE POULTRY.—The heavy quantities submitted by us at each market did not fill demands, for buyers were keen in their operations, and although each sale recorded extensive penning, it is pleasing for us to report that each lot was sold at most satisfactory prices. In fact, buyers were anxious to secure anything fit to kill, and the lighter breeds participated in the demand. We advise consigning. Crates obtainable on application. The following rates ruled at our last auction:—Prime roosters, 4s. 6d. to 6s. 6d.; nice-conditioned cockerels, 3s. to 4s. 3d.; fair-conditioned cockerels, 2s. 6d. to 2s. 11d.; plump hens, 3s. to 4s. 10d.; medium hens, 2s. 3d. to 2s. 9d.; couple of pens lower; geese, 6s. to 6s. 9d.; ducks, good conditioned, 4s. to 5s. 6d.; ducks, fair conditioned, 3s. to 3s. 9d.; ducklings lower; turkeys, good to prime condition, 1s. to 1s. 5d. per lb. live weight; turkeys, fair conditioned, 10½d. to 11½d. per lb. live weight; turkeys, fattening sorts, lower; pigeons, 7d. each.

POTATOES.—Best Victorians at 12s. to 13s. per cwt. on rail.

ONIONS.—Best brown onions at 18s. per cwt. on rail.

IMPORTS AND EXPORTS OF FRUITS, PLANTS, ETC., DURING THE MONTH OF MAY, 1925.

IMPORTS.

Interstate.

Apples (bushels)	4,137
Grapes (bushels)	1
Passion fruit (bushels)	595
Paw paws (bushels)	3
Pears (bushels)	119
Pineapples (bushels)	65
Quinces (bushels)	1
Bananas (bushels)	13,479
Coconuts (packages)	1
Carrots (packages)	22
Garlic (packages)	15
Swedes (packages)	48
Tomatoes (packages)	1
Onions (bags)	2,049
Potatoes (bags)	20,299
Bulbs (packages)	39
Plants (packages)	82
Seeds (packages)	70
Wine casks (empty)	3,462

Fumigated—9 wine casks.

Rejected—2bush. apples, 3bush. bananas, 1bush. grapes, 3bush. paw paws, 1 package bulbs, 3 second-hand cases.

Overseas.

Federal Quarantine Act.

Seeds, &c.	11,791
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EXPORTS.

Federal Commerce Act.

536 packages citrus fruit, 703 packages other fresh fruit, 4,795 packages dried fruit, 21 packages honey, 9 packages plants, and 12 packages seeds were exported to overseas markets. These were consigned as follows:—

London.

Apples	428
Pears	150
Honey	21
Dried fruit	942

New Zealand.

Dried fruit	3,782
Citrus fruit	536
Seeds	12
Plants	7

IMPORTS AND EXPORTS OF FRUITS, PLANTS, ETC.—*continued.*

<i>South Africa.</i>	
Plants	1
Dried fruit	55
<i>India and East.</i>	
Apples	125
Dried fruit	16
<i>Mauritius.</i>	
Plants	1

SOIL EXHAUSTION.

To an inquiry from the Kapunda Branch of the Agricultural Bureau as to which made the heavier demands on the soil, a hay crop or a wheat crop, the Director of Agriculture (Professor A. J. Perkins) mentioned that whilst he was at Roseworthy he did a certain amount of work, in the course of which the point raised by the Kapunda Branch came under consideration. The results of this work were published in the June, 1912, and the February, 1914, numbers of the *Journal of Agriculture*. Briefly, the general position was put by the Director as follows:—

From the same crop hay was cut at seven (7) different intervals between October 10th and November 20th, starting with hay shortly after full bloom and ending with the grain practically ripe. Over these successive periods the following quantities of mineral matter per acre were taken away by the crop:—

	Lbs.
October 10th	292.7
October 16th	301.4
October 23rd	320.6
October 30th	368.5
November 6th	287.5 (anomalous)
November 13th	347.5
November 20th	292.9

It will be noted, therefore, that apart from the abnormal figure for November 6th, the amount of mineral matter taken away from the soil increased as the crop ripened up to November 13th, but fell away as the crop continued to ripen towards the end of November. Now this falling away might be due partly to the falling of the flag; partly, too, to a return of minerals to the root system. This result was confirmed in the preceding year's tests.

In summary, then, if by soil exhaustion we simply mean what the crop takes from the soil, it would seem at first sight that a crop of hay cut in the early stages would be less costly than a grain crop. On the other hand, we must bear in mind that a hay crop removes from the land the whole of the crop, grain, flag, and haulms, whereas a wheat crop removes only the grain, and that if the stubble is depastured the minerals from the straw are returned to the ground. Similarly, if the stubble is burned, the ashes—in part at all events—return to the soil.

ADVISORY BOARD OF AGRICULTURE.

The monthly meeting of the Advisory Board of Agriculture was held on Wednesday, June 10th, there being present:—Mr. F. Coleman (Acting Chairman), Messrs. C. J. Tuckwell, A. M. Dawkins, A. B. Feuerheerdt, J. W. Sandford, L. Cowan, B.Sc. (Agric.), H. Wicks, Hon. W. G. Duncan, M.L.C., Professor Arthur J. Perkins (Director of Agriculture), and Mr. H. J. Finnis (Secretary).

Apologies were received from Capt. S. A. White, C.M.B.O.U., Col. J. Rowell, C.B., Messrs. W. S. Kelly, H. S. Taylor, P. H. Jones, and F. Julius.

Climatological Station on River Murray.—The Hon. the Premier intimated that the Meteorological Department had been asked, through the Prime Minister, to take official cognizance of the meteorological data at present collected at the Government Orchard at Berri, and to establish a climatological station there.

Inspection of Dairy Cattle on Eyre Peninsula.—In replying to the request of the Petina Branch that an inspector be sent to Eyre Peninsula to inspect dairy cattle and test for tuberculosis, the Chief Inspector of Stock (Mr. C. A. Loxton, B.V.Sc.) said the number of dairy cattle on Eyre Peninsula was small, and reports of disease required by the Stock Diseases Act were rarely received. There did not, therefore, appear to be any necessity to incur the expense of a special visit of inspection. The request from Petina would, if possible, be complied with when an inspector next visited the West Coast. The Secretary was instructed to advise the Branch in the terms of the Chief Inspector's report.

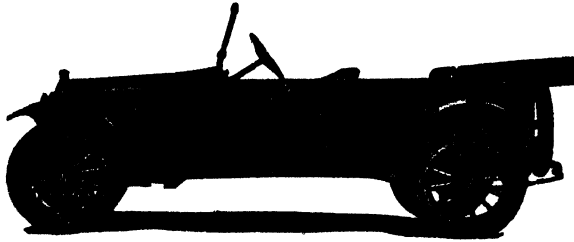
Coast Disease on Kangaroo Island.—Correspondence relating to coast disease in sheep on Kangaroo Island was received from the Shoal Bay Branch. The Branch intimated that it proposed to carry out investigations in connection with the disease, and asked that a Veterinary Officer be sent to Kangaroo Island to report on the work. It was decided to ask the Chief Inspector of Stock for a report on the matter.

Resolutions from River Murray Conference.—The following resolutions were brought before the Board:—

(a) "That in the opinion of this Conference it is desirable that an experimental station should be established on a reclaimed area of the Murray at the earliest practical opportunity." It was decided to transmit the resolution to the Minister with the support of the Board.

(b) "That the Public Library, Adelaide, be requested to establish a reference library dealing with agricultural matters, for circulation by post, as done in New South Wales." The Board expressed their agreement with the value of the scheme, but as an alternative scheme had recently received the approval of the Government, they were not prepared to urge the adoption of the proposal at this juncture.

(c) "That a departmental officer be appointed as citricultural expert, clothed with the necessary power to enforce spraying, &c., and



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generally to assist growers with timely advice." The Secretary stated that in 1923 a similar resolution had been carried at a Conference held at Renmark. In reply thereto, it had been stated that Mr. W. Muspratt was appointed to carry out the duties referred to in the resolution, and that the Irrigation Commission hoped to be able to relieve Mr. Muspratt from other duties which had prevented him giving sufficient time to instructional work. The Secretary was instructed to ascertain from the Irrigation Commission whether the services of Mr. Muspratt were available to the settlers along the river.

(d) "That the Conference requests the Irrigation Commission to make water rates due on June 1st, instead of April 1st." It was decided to transmit the resolution to the Irrigation Commission.

Women's Classes at Roseworthy Agricultural College.—The following resolution was carried by the Saddleworth Women's Branch:—"That women's classes be held at Roseworthy Agricultural College, on the same lines as those held at Dookie Agricultural College, Victoria, with such satisfactory results." It was decided to ask the Principal of the Roseworthy Agricultural College to report on the resolution.

The Secretary intimated that Messrs. Hugh V. McKay Proprietary Limited had presented a handsome cup for the Crop Competition being conducted in County Le Hunte (Eyre Peninsula). Members of the Minnipa, Yaninee, Pygery, and Wudinna Branches would be eligible to enter the competition, and the cup would be presented to the competitor who was awarded the highest aggregate number of points over a period of three years. The Secretary was instructed to thank the company for the interest they had shown in the competition, and for the handsome trophy which they had offered.

Branches to be Closed.—It was decided to close the Mount Bryan East and Moorak Branches.

New Members.—The following names were added to the rolls of existing Branches:— Booleroo Centre—L. Alexander, S. Barker; Wynarka—J. Yeates; Kalangadoo—C. Bennett; Streaky Bay—H. H. Old, jun., B. Hand; Berri—H. P. Cawse; Lyndoch—G. Lawes; Strathalbyn—A. T. Warren; Parilla Well—J. Rice; Farrell's Flat—H. Torr; Black Springs—J. Murphy; New Residence—W. O. Thomm; Butler—A. H. Young, C. R. Young, R. Young; Coultas—C. Kennett, W. Jukes, T. Hanson; Pygery—R. Hodson, J. Hodson; Port Elliot—J. W. Crompton; Halidon—F. Baker, G. Peters, S. Wright, L. Haliday, C. Pepper, J. Fraser; Tweedvale—W. G. Cratson, M. Dohnt, P. E. Reuter; Nelshaby—T. B. Jose, E. H. Williams, R. Williams, A. W. Collins; Virginia—A. E. Chamberlain; Yeelanna—M. Aikenhead; Miltalie—F. H. Coles, C. E. Padgham; Pinnaroo—J. J. O'Dea; Marama—R. Ratcliff, W. Ratcliff; Brinkworth—F. J. Wooldridge, C. Provis; Allandale East—M. Carlin, B. Carlin; Cherry Gardens—T. W. Wallace; Millicent—W. E. Spehr; Mundalla—F. Trenorden; Petina—H. J. Hoobin; Wirrabara—G. Brimblecombe; Rockwood—A. L. Smith; Narrung—C. Ramsey, F. E. Bowden; Lyndoch—W. G. Hammat; Laura—Pycroft; Stockport—Carmichael, S. Nairn, C. Najrn.

RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of, and to the end of June, 1925, also the average precipitation to the end of June, and the average annual rainfall.

Station.	For June, 1925.	To end June, 1925.	Av. end June.	Av'ge. Annual Rainfall	Station.	For June, 1925.	To end June, 1925.	Av. end June.	Av'ge. Annual Rainfall
FAR NORTH AND UPPER NORTH.					LOWER NORTH—continued.				
Oodnadatta	—	1.20	3.03	4.96	Gulnare	1.01	7.34	8.20	19.48
Marree	—	3.03	4.28	6.03	Yacka	0.77	7.34	6.92	15.56
Farina	0.02	4.24	3.80	6.66	Koolunga	0.55	6.06	7.18	15.95
Copley	0.06	3.19	4.69	8.35	Snowtown	0.24	5.09	7.38	16.09
Beltana	0.05	5.04	4.86	8.95	Brinkworth	1.00	8.29	7.18	16.39
Blinman	—	4.76	6.56	12.51	Blyth	0.73	6.36	7.84	17.07
Tarcoola	0.15	2.20	3.99	7.64	Clare	1.36	8.93	11.06	24.80
Hookina	0.12	3.77	6.54	13.29	Mintaro	1.06	6.83	10.21	23.86
Hawker	0.05	4.10	6.28	12.94	Watervale	1.22	7.69	12.34	27.64
Wilson	—	3.45	6.15	12.63	Auburn	0.68	5.99	11.93	24.41
Gordon	0.19	5.26	5.63	11.52	Hoyleton	0.46	5.26	8.10	17.91
Quorn	0.22	3.40	6.57	14.26	Balaklava	0.41	5.53	7.43	15.98
Port Augusta	0.22	4.02	4.94	9.68	Port Wakefield	0.63	4.55	6.71	13.28
Port Augusta West	0.20	3.91	4.70	9.70	Terowie	0.60	8.93	6.08	13.82
Bruce	0.16	2.20	5.05	10.79	Yarcowie	0.40	7.41	6.42	14.19
Hammond	0.28	3.16	6.08	12.02	Hallett	1.12	8.18	7.04	16.53
Wilmington	0.70	3.81	8.48	18.41	Mount Bryan	0.74	6.62	7.10	17.13
Willowie	0.63	3.88	5.90	12.79	Kooriga	0.63	5.07	8.06	18.14
Melrose	1.24	7.90	11.28	23.53	Farrell's Flat	0.75	6.00	8.47	19.09
Booleroo Centre	1.23	6.09	7.24	15.82					
Port Germein	0.33	3.26	6.25	12.90	WEST OF MURRAY RANGE.				
Wirrabara	1.95	6.67	8.89	19.85	Manoora	1.14	6.60	8.23	19.12
Appila	0.73	5.07	6.91	15.05	Saddleworth	1.11	6.48	9.04	19.89
Cradock	0.11	4.64	5.61	11.53	Marrabel	1.53	6.50	8.83	20.00
Carrieton	0.20	4.22	6.00	12.95	Riverton	1.10	5.83	9.49	20.97
Johnburg	0.09	3.86	5.08	10.99	Tarlee	1.16	5.45	8.23	18.18
Eurelia	0.51	4.91	6.00	13.62	Stockport	1.11	6.58	7.57	16.89
Orroroo	0.56	4.51	5.60	13.73	Hamley Bridge	1.09	7.10	7.76	16.82
Naokara	—	6.69	6.01	11.85	Kapunda	1.47	7.01	9.03	20.04
Black Rock	0.46	4.54	6.08	12.83	Freeling	1.57	6.39	8.21	18.19
Uoolta	—	3.24	5.52	11.91	Greenock	1.92	6.96	9.65	21.93
Peterborough	0.31	5.48	6.27	13.60	Truro	0.96	5.97	9.04	20.43
Yongala	0.46	6.31	6.52	14.73	Stockwell	1.15	6.82	9.17	20.58
					Nuriootpa	1.06	5.94	9.42	21.17
LOWER NORTH-EAST.					Angaston	1.75	7.59	10.11	22.71
Yunta	—	4.01	4.55	8.79	Tanunda	1.71	6.14	10.25	22.40
Waukaringa	0.09	3.73	4.35	8.47	Lyndoch	1.89	6.82	10.38	23.41
Mannahill	0.09	4.13	4.41	8.62	Williamstown	2.16	8.10	12.70	27.75
Cookburn	0.05	4.07	4.42	8.29					
Broken Hill, N.S.W.	0.15	5.80	5.13	9.99	ADELAIDE PLAINS.				
					Owen	1.07	6.73	—	—
LOWER NORTH.					Mallala	0.71	7.13	7.94	16.92
Port Pirie	1.08	4.24	6.65	13.58	Roseworthy	1.32	5.85	8.08	17.59
Port Broughton	0.68	4.21	6.90	14.33	Gawler	1.78	6.90	9.00	19.24
Bute	1.00	6.10	7.32	15.90	Two Wells	0.85	5.43	7.72	16.03
Laura	1.15	6.95	8.16	18.34	Virginia	1.52	7.08	8.31	17.51
Caltowie	0.69	6.79	7.57	17.27	Smithfield	1.87	6.96	8.13	17.62
Jamestown	1.24	7.28	7.77	18.04	Salisbury	2.10	7.33	8.98	18.75
Gladstone	0.77	6.64	7.23	16.42	North Adelaide	2.43	14.37	10.54	22.66
Crystal Brook	0.93	6.97	7.34	16.00	Adelaide	2.34	13.36	10.11	21.18
Georgetown	1.35	7.80	8.43	18.64	Glenelg	1.41	8.96	8.96	18.63
Narriady	0.57	4.77	7.60	16.88	Brighton	1.85	7.11	10.24	21.60
Redhill	0.77	5.45	8.03	17.38	Mitcham	1.81	12.10	11.57	24.54
Spalding	1.09	7.50	8.41	20.24	Glen Osmond	2.61	12.56	12.39	26.34
					Magill	2.99	10.80	12.28	25.81

RAINFALL—continued.

Station.	For June, 1925.	To end June, 1925.	Av. end June.	Av'ge Annual Rainfall	Station.	For June, 1925.	To end June, 1925.	Av. end June	Av'ge Annual Rainfall
MOUNT LOFTY RANGES.					WEST OF SPENCER'S GULF—continued.				
Teatree Gully.....	2.48	7.26	12.39	28.32	Dark's Peak.....	0.80	4.17	7.22	16.43
Stirling West.....	4.50	18.39	21.89	47.30	Kimba.....	0.45	3.34	6.97	15.85
Uraidla.....	4.33	17.89	20.88	44.79	Wudinna.....	0.50	4.75	—	—
Clarendon.....	2.57	12.24	15.80	33.29	Minnipa.....	1.09	5.14	7.08	15.32
Morphett Vale.....	1.10	7.88	10.82	23.07	Tumby.....	0.76	5.53	6.04	14.62
Noarlunga.....	1.34	7.38	9.33	20.56	Carrow.....	0.59	4.02	6.79	14.31
Willunga.....	1.94	11.40	12.20	26.09	Arno Bay.....	0.33	4.60	5.81	13.01
Aldinga.....	2.12	7.74	9.88	20.56	Cleve.....	0.29	5.63	6.78	—
Myponga.....	2.42	9.95	13.50	30.35	Cowell.....	0.15	3.90	5.72	11.57
Normanville.....	1.64	7.99	9.98	20.88	YORK PENINSULA				
Yankalilla.....	1.49	7.07	11.47	23.59	Wallaroo.....	0.70	4.74	7.20	14.19
Mount Pleasant.....	1.73	8.58	12.29	27.62	Kadina.....	0.82	5.13	7.85	16.08
Birdwood.....	2.07	7.88	13.25	29.78	Moonta.....	0.96	4.52	7.73	15.39
Gumeracha.....	2.35	8.47	14.28	33.69	Green's Plains.....	1.21	5.32	7.52	15.97
Millbrook Reservoir.....	2.29	8.41	16.61	38.63	Maitland.....	1.07	6.06	9.64	20.31
Tweedvale.....	3.64	12.16	16.06	36.12	Ardrossan.....	0.66	4.19	6.81	14.25
Woodside.....	3.12	11.76	14.31	32.48	Port Victoria.....	0.45	4.34	7.56	15.62
Ambleside.....	3.20	12.36	15.48	25.23	Curramulka.....	0.84	4.89	8.38	18.31
Nairne.....	1.60	10.09	12.85	28.63	Minlaton.....	1.45	5.85	8.45	18.06
Mount Barker.....	1.77	9.62	13.97	31.54	Brentwood.....	0.60	4.30	7.30	16.02
Echunga.....	2.52	12.53	15.45	33.41	Stansbury.....	0.73	4.44	7.91	17.15
Macclesfield.....	2.19	12.34	13.51	30.90	Warooka.....	1.46	5.68	8.22	17.97
Meadows.....	1.97	12.56	16.38	36.61	Yorketown.....	0.99	4.96	7.98	17.35
Strathalbyn.....	1.28	8.76	8.78	19.45	Edithburgh.....	0.62	4.96	7.88	16.70
MURRAY FLATS AND VALLEY.					SOUTH AND SOUTH-EAST.				
Meningie.....	2.07	7.72	8.70	18.83	Cape Borda.....	1.82	10.48	11.99	25.13
Milang.....	0.74	7.32	7.32	15.47	Kingscote.....	1.90	10.49	8.83	19.15
Langhorne's Creek.....	1.58	7.42	6.66	14.88	Penneshaw.....	2.88	9.34	9.09	19.53
Wellington.....	0.92	7.06	6.92	14.85	Victor Harbor.....	1.84	8.29	9.97	21.51
Tailem Bend.....	0.83	8.78	6.56	14.92	Port Elliot.....	1.88	8.88	9.37	20.17
Murray Bridge.....	0.70	7.42	6.51	13.98	Goolwa.....	1.63	10.22	8.36	17.87
Callington.....	0.62	5.97	7.08	15.66	Meribah.....	0.32	5.53	—	—
Mannum.....	0.43	6.52	5.67	11.66	Alawoona.....	0.45	5.49	—	—
Palmer.....	0.76	6.12	6.66	15.58	Mindarie.....	0.58	6.55	4.75	12.39
Sedan.....	0.21	5.55	5.81	12.37	Sandalwood.....	0.75	7.46	6.26	14.98
Swan Reach.....	0.24	5.72	5.08	11.05	Karoonda.....	0.71	7.76	6.55	15.32
Blanchetown.....	0.29	3.81	4.90	10.01	Pinnaroo.....	0.93	7.56	6.99	15.60
Eudunda.....	0.69	6.71	7.84	17.53	Parilla.....	0.56	6.63	6.33	14.77
Sutherland.....	0.11	4.16	4.92	11.27	Lameroo.....	0.82	9.55	7.09	16.51
Morgan.....	0.14	6.94	4.25	9.26	Parrakie.....	0.30	8.64	6.20	14.83
Waikerie.....	0.29	5.56	6.37	9.79	Geranium.....	0.82	9.43	7.04	16.83
Overland Corner.....	0.37	4.65	5.21	10.15	Peake.....	0.92	8.47	7.29	16.86
Loxton.....	0.24	5.88	5.73	12.36	Cooke's Plains.....	0.62	9.22	6.81	15.31
Renmark.....	0.45	5.99	4.98	10.98	Coomandook.....	0.98	8.18	7.68	17.50
Monash.....	0.26	4.52	—	—	Coonalpyn.....	1.13	8.36	7.71	17.51
WEST OF SPENCER'S GULF.					Tintinara.....	1.81	10.08	8.21	18.89
Eucla.....	0.46	8.45	5.45	9.98	Keith.....	1.59	6.42	7.91	18.38
Fowler's Bay.....	0.63	4.45	6.26	12.14	Bordertown.....	1.71	7.87	8.55	19.46
Penong.....	1.61	4.87	6.41	12.61	Wolsley.....	1.14	7.68	7.92	18.31
Ceduna.....	0.99	4.85	4.35	10.25	Frances.....	1.47	8.57	8.40	19.93
Smoky Bay.....	1.32	4.77	5.16	11.16	Naracoorte.....	2.49	8.36	9.97	22.63
Petina.....	1.14	4.80	5.88	13.12	Penola.....	2.12	12.71	11.58	23.10
Streaky Bay.....	1.68	7.29	7.39	15.11	Lucindale.....	2.02	9.57	10.16	24.53
Talis.....	1.50	5.55	6.48	15.36	Kingston.....	2.88	10.82	11.39	24.71
Port Elliot.....	2.34	8.12	7.80	16.66	Robe.....	3.93	13.54	11.45	27.14
Port Lincoln.....	1.81	8.22	9.07	19.71	Beachport.....	3.18	13.93	12.80	29.51
Casmine.....	1.46	7.78	7.86	18.85	Millicent.....	2.72	15.03	12.66	33.25
Yellana.....	0.94	5.37	7.28	—	Kalangadoo.....	2.20	14.35	13.46	31.25
Ugarras.....	0.70	6.07	7.00	17.35	Mount Gambier.....	2.33	13.84	13.84	26.63

AGRICULTURAL BUREAU REPORTS.

INDEX TO CURRENT ISSUE AND DATES OF MEETINGS.

Branch.	Report on Page	Dates of Meetings		Branch.	Report on Page	Dates of Meetings	
		July.	Aug.			July.	Aug.
Alawoona	•	—	—	Frances	•	25	29
Aldinga	•	8	—	Gawler River	•	6	3, 31
Allandale East	1145	3, 31	27	Georgetown	•	4	1, 29
Alma	•	7	—	Geranium	•	25	29
Amyton	•	6	3, 31	Gladstone	1116	3, 31	28
Angaston	•	—	—	Glencoe	•	9	6
Appila-Yarrowie	•	—	—	Glossop	1128	1	5
Arthurton	•	—	—	Goode	•	8	5
Ashbourne	•	—	—	Green Patch	•	6	3, 31
Balaklava	•	11	8	Gulnare	•	8	5, 26
Balhannah	1144	3	—	Gumeracha	•	6	3, 31
Barmera	A.M.	6	3, 31	Halidon	1136	7	5
Beetaloo Valley	•	—	—	Hartley	•	—	—
Belalie North	†	3	28	Hawker	•	7	4
Berri	1136	8	5	Hilltown	•	—	—
Bethel	†	7	4	Hookina	•	2, 30	—
Big Swamp	•	—	—	Inman Valley	•	—	—
Blackheath	1137	3	7	Ironbank	1145	3, 31	28
Black Springs	†	—	—	Kadina	•	—	—
Blackwood	†	13	10	Kalangadoo (Women's)	†	11	8
Block E	•	—	—	Kalangadoo	†	11	8
Blyth	•	4	1	Kangarilla	†	—	—
Boooleroo Centre	1112	3, 31	28	Kanmantoo	†	4	1
Borrika	•	—	—	Kapunda	1117	3, 31	28
Brentwood	†	2, 30	—	Karoonda	•	8	5
Brinkley	1136	4	1, 29	Keith	†	2, 30	—
Brinkworth	1114	6	3, 31	Ki Ki	•	—	—
Bundaleer Springs	•	—	—	Kilkerran	•	2, 30	—
Bunora	†	6	4	Kimba	•	—	—
Bute	†	2, 30	—	Kingston-on-Murray	•	—	—
Butler	1122	—	—	Kongorong	•	6	3, 31
Calca	•	—	—	Koonibba	•	2, 30	—
Cadell	•	—	—	Koppio	•	6	3, 31
Canowie Belt	•	—	—	Kringin	•	4	1, 29
Carrow	1122	1, 29	—	Kybybolite	†	2, 30	—
Charra	†	1	—	Lake Wangary	•	4	1
Cherry Gardens	1145	—	—	Lameroc	•	5	1, 29
Glanfield	•	—	—	Laura	1114	4	1
Clare	•	—	—	Lenswood and Forest Range	1145	—	—
Clarendon	•	—	—	Light's Pass	•	—	—
Claypan Bore	•	8	5	Lipsen	1128	—	—
Cleve	•	1, 29	—	Lone Gum and Monash	•	1, 29	—
Cobdogla	†	—	—	Lone Pine	•	—	—
Collie	1124	—	—	Longwood	•	—	—
Colton	•	—	—	Loxton	•	—	—
Coomandook	•	1, 29	—	Lucindale	•	—	—
Coonalpyne	•	3	7	Lyndoch	1121	2	—
Cradook	†	—	—	McLachlan	•	—	—
Crystal Brook	†	3	7	McLaren Flat	†	—	—
Cungena	•	—	—	MacGillivray	1138	—	4
Currency Creek	1145	3	7	Maitland	•	2, 30	—
Cygnat River	•	2, 30	—	Mallala	•	20	17
Darke's Peak	•	—	—	Maltee	•	3, 31	28
Denial Bay	•	—	—	Mangalo	•	—	—
Edillilie	•	4	1, 29	Mannadarie	A.M.	2, 30	—
Elbow Hill	1124	7	—	Marama	1136	6	—
Euralia	†	11	8	Meadows	•	8	5
Farrell's Flat	1116	3, 31	28	Milang	•	11	8
Finnis	1137	3	28				

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		July.	Aug.			July.	Aug.
Millicent	•	3	7	Rockwood	•	6	3
Miltalie	†	4	1	Rosedale	1121	16	13
Mindarie	•	6	3	Rosy Pine	•	—	—
Minlaton	•	3, 31	28	Rudall	†	2, 30	—
Minnipa	•	1, 29	—	Saddleworth	•	—	—
Monarto South	1130	4	—	Saddleworth (Women's)	1120	14	11
Moonta	•	3, 31	28	Salisbury	†	7	4
Moorook	•	6	3, 31	Salt Creek	•	—	—
Morchard	1111	4	1, 29	Sandalwood	•	—	—
Morphett Vale	•	9	6	Shoal Bay	1145	—	—
Mount Barker	1140	1, 29	—	Smoky Bay	•	4	—
Mount Bryan	1114	—	—	Spalding	•	15	21
Mount Gambier	•	11	8	Stirling	•	—	—
Mount Hope	1128	4	1, 29	Stockport	†	9	6
Mount Pleasant	1144	—	—	Streaky Bay	•	11	8
Mount Remarkable	•	—	—	Strathalbyn	•	—	4
Mount Schank	•	7	4	Talia	1127	11	8
Mundalla	•	1, 29	—	Tantanoola	1146	4	1
Murray Bridge	1130	—	—	Taplan	•	28	—
Murraytown	1116	—	—	Tarcowie	•	28	4
Myponga	1136	1, 29	—	Tarlee	•	7	—
Myrta	•	4	1, 29	Tatiara	1148	—	—
Nantawarra	1118	2, 30	—	Tweedvale	1145	9	6
Naracoorte	1148	11	8	Two Wells	•	—	—
Narridy	1114-16	4	1	Uraidla & Summertown	•	6	3
Narrung	•	11	8	Veitch	•	—	—
Neeta	•	—	—	Virginia	•	1	—
Nelsaby	•	4	1, 29	Waikerie	•	11	8
Netherton	•	1, 29	—	Wall	•	—	—
New Residence	•	1, 29	—	Wanbi	†	22	26
North Booborowie	1116	—	—	Warcovie	1112	7	4
North Bundaleer	•	—	—	Watervale	•	—	—
Nunkeri and Yurgo	†	1, 29	—	Wauralte	1122	7	4
O'Loughlin	•	—	—	Weavers	1122	6	10
Orroroo	1112	—	—	Wepowie	1112	6	3, 31
Owen	1120	3, 31	26	Whyte-Yarcovie	†	6	3, 31
Parilla	1136	3	—	Williamstown (Women's)	1121	1	5
Parilla Well	1132	6	—	Williamstown	1121	•	—
Paruna	•	—	—	Willowie	•	1, 29	—
Paskeville	•	3, 31	26	Wilkwatt (Women's)	1136	—	—
Pata	•	—	—	Wilmington	•	1, 29	—
Penola	†	4	1	Windsor	•	—	—
Penneshaw	•	13	10	Wopkie	•	—	—
Petina	1128	25	22	Wirrabara	1116	—	—
Pinnaroo	1133	3	7	Wirrega	•	—	—
Pinnaroo (Women's)	†	3	7	Wirrilla	•	4	1, 29
Pompoota	•	8	12	Wirrulla	1128	15	19
Poochera	•	1	5	Wookata	•	—	—
Port Bronghton	•	3	28	Wudinna	1128	—	—
Port Elliot	†	18	15	Wynarka	†	—	—
Port Germein	•	4	8	Yaaka	•	1, 29	4
Pygery	•	4	1, 29	Yadnarie	†	1, 29	4
Ramco	•	6	3, 31	Yallunda Flat	1127	—	5
Rapid Bay	A.M.	4	1	Yaninee	•	—	—
Redhill	†	—	—	Yeelanna	1128	4	1, 29
Rendelsham	A.M.	6	3	Yongala Vale	•	—	—
Renmark	•	2, 30	—	Yorketown	•	—	—
Riverton	•	—	—	Youngusband	1124	9	6
Riverton (Women's)	•	—	—				
Roberts and Verran	1126	2, 30	—				

* No report received during the month of June. † Formal. ‡ Held over until next month.
A.M. Annual Meeting.

THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA

Every producer should be a member of the Agricultural Bureau. A postcard to the Department of Agriculture will bring information as to the name and address of the secretary of the nearest Branch.

If the nearest Branch is too far from the reader's home, the opportunity occurs to form a new one. Write to the department for fuller particulars concerning the work of this institution.

REPORTS OF BUREAU MEETINGS.

UPPER-NORTH DISTRICT.

(PETERBOROUGH AND NORTHWARD.)

MORCHARD (Average annual rainfall, 13.50in.).

May 2nd.—Present: 13 members and five visitors.

WHEAT GROWING BEGINS.—In the course of a paper under this title Mr. R. Hannah first referred to various phases of the cultivation of wheat and the need for a constant watch against the pests and diseases which attacked the crop. Continuing, the speaker said the ideal seed-bed for wheat was a mulch of well-broken surface soil over a well-compacted soil. When a farmer had prepared a perfect seed-bed, his chances of reaping a perfect crop could still be ruined by the use of disease-laden, carelessly-selected seed. The element of chance in that respect could be eliminated by the use of well-cleaned and pickled wheat. Despite the fact that pickling was recognised as a sound farming practice, there were farmers who did not pickle. They relied on their fancied ability to buy clean seed from neighbors who were known to pickle their wheat before sowing. They argued that as the produce of pickled wheat, it would be quite free from smut, and there would be little risk in sowing it without pickling. Some farmers had found from bitter experience that their judgment was not always to be relied on, and enough smut had been present to badly infect the crop. There was one way of avoiding that—thoroughly pickling all the grain. There were several fungicides on the market, but the most popular were bluestone and formalin. Formalin had been found to depress germination rather less than bluestone. The formalin solution should be made by adding 1lb. formalin to 45galls. water. For bluestone, dissolve 1½lbs. to every 10galls. of water. The proper effect was obtained only when the wheat was soaked for at least three minutes. Where wheat was smutty four minutes should be allowed, but extra seed should be sown to make up for decreased germination. As the pickle was used, it should be replaced from a stock made up in the standard manner. Haphazard replenishment of the pickle was a frequent source of smut infection. Powdered copper carbonate was the latest fungicide on the market, and he thought the new style of pickling would in time largely supersede existing methods. Two points retarding its general use were the cost and its liability to clog the drills. Experiments with the new treatment of dry copper carbonate indicated that not only were the smut spores destroyed, but reinfection of the seed was prevented and a more satisfactory germination of the seed took place.

WATER ON THE FARM.—Mr. H. Kupke, who read a paper dealing with this subject, first referred to the various methods in use for raising water. For storage purposes, he recommended a cement tank of from 2,000galls. to 7,000galls. The water should be piped to as many paddocks as possible, and troughs about 18ft. to 24ft. long of 12in. x 21in. size, with a ballcock, should be installed, so that the trough could be filled as quickly as possible. The troughs should be cleaned out every week or 10 days. A good stock trough could be built with bricks and cement, 2ft. 6in. x 4ft. wide and 14ft. long, and provided with a

washout plug. For sheep, he preferred galvanized troughing fitted with a washout plug. If there was a plentiful supply of water, piping should be laid to the garden, where vegetables and flowers and also a patch of lucerne could be grown. Water could also be taken to the chaffhouse for damping down hay, and to the fowlhouse and other stock enclosures close to the homestead.

WARCOWIE (Average annual rainfall, 12.16in.).

June 2nd.—Present: eight members.

HANDLING AND BREAKING IN YOUNG HORSES.—Mr. J. Ryan, jun., in the course of a short paper dealing with this subject, said at the age of three years the average horse should be fit to be broken in for farm work. Most farm-bred horses were usually fairly quiet, and to catch and mouth such animals would only be the work of a few hours. The colt should then be harnessed with a well-fitting collar, placed between two reliable horses, and hitched to a farm vehicle, which should not be too heavy. During this work the colt should be taught to stop and start at the driver's command. It should then be ready to put in the team for a few hours each day until it was able to work all day. The most important factor in handling the horse was to be firm with it from the start. On no account should it be hit about the head.

WEPOWIE (Average annual rainfall, 13in. to 14in.).

June 8th.

Mr. J. Crocker contributed a paper, "Tree Planting," which was read by the Hon. Secretary (Mr. W. F. J. Smith). In discussing the paper, Mr. T. Orrock said the land should first be ploughed and then broken up finely with a digging fork. The bamboo containing the young tree should then be pushed the required depth into the ground. He also favored ploughing the ground and leaving it as fallow for a year. It was a mistake to simply dig a hole for the tree, because the soil always cracked around the edge of the hole, and allowed air to get to the roots, thereby killing the tree. Mr. W. Smith said pepper trees should not be planted around the homestead. Mr. J. Burns said the best time to top sugar gums was during October. The Hon. Secretary then read the annual report.

ORBOROO, May 30th.—A paper, "The Drift of the Rural Population to the Cities," was read by the Hon. Secretary (Mr. S. C. Wakeford), and an interesting discussion followed.

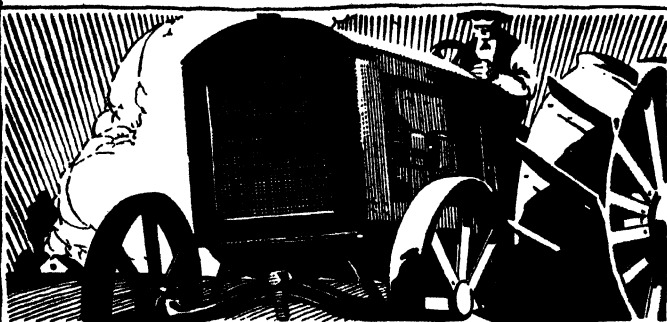
MIDDLE-NORTH DISTRICT.

(PETERBOROUGH TO FARRELL'S FLAT.)

BOOLEROO CENTEE (Average annual rainfall, 15.83in.).

June 12th.—Present: 13 members.

WORKING THE LAND.—In the course of a paper under this title, Mr. L. Paterson said ploughing was the first operation in preparing the land for a crop. The depth should be regulated according to the nature of the soil, and for the Booleroo Centre district he favored a depth of from 3in. to 4in. He then quoted the results of a series of depths of ploughing tests which had been carried out at Roseworthy Agricultural College. After fallowing, the land should be worked with stump-jump harrows. The most essential point was to have enough harrows engaged to complete the operation in a few days, because the moisture soon dried out and the best results would not then be obtained. Directly a crust formed on the surface of the land, the spring-tooth cultivator should be worked to a depth of about 1in. to 1½in. During summer, the land should be worked after each rain to conserve moisture and prevent a crust forming. For that work, the harrows were very suitable, unless weeds were present, when a light cultivating would be necessary. If the spring and summer had been very dry, the roller used before the cultivator at seeding time would prove beneficial. In the discussion that



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CHAS.

followed, Mr. W. Mills favored deep cultivating to kill weeds. Mr. L. Michael did not think it possible to cultivate as shallow as stated in the paper, neither did he approve of working the land when it was dry. Mr. W. Berry preferred to leave the fallow until August before harrowing. If the cultivating of the fallow was left until September and October, many of the summer weeds would have started, and would then be killed. Red land should not be given too much cultivation, because it was inclined to run together. Mr. C. Llewellyn thought 2 in. to 2½ in. sufficiently deep for cultivating.

BRINKWORTH.

June 1st.—Present: 27 members and four visitors.

The first annual report of the Brinkworth Branch was presented by the Hon. Secretary (Mr. E. L. Carlyon) at the June meeting. Twelve meetings had been held during the year under review, with an average attendance of 27 members. The financial statement showed a credit balance of £2 5s. 6d. It was decided to donate £1 10s. to the local school for the purchase of a Babcock tester. It was also resolved to present a prize to be competed for by the school children for the best home garden.

LAURA.

May 16th.—Present: eight members.

Mr. Milling read a paper, "Breed and Egg Production." He paid a tribute to the Australian breeders of White Leghorn fowls for the successes that they had achieved in raising birds of such high producing capabilities. Many attempts had been made to cross the Leghorn with other breeds, but they had not been altogether successful. He believed that if crossing were resorted to, the best results would be attained by the introduction of a male Minorca bird. The pure-bred Minorca hen was an excellent bird for egg production. He had been breeding the Minorca-White Leghorn cross for five years, and by hatching at the proper season, had secured birds which produced a plentiful supply of eggs at all times. The Black Orpington was the only breed that threatened the popularity of the White Leghorn, but until broodiness could be "bred out" of the Orpingtons, they could not be classed as serious rivals to the Leghorns. The crossing of the Orpingtons with other black breeds of "non-setters" had made a noticeable change in character, and the breed was now recognised as the utility Black Orpington.

MOUNT BRYAN (Average annual rainfall, 15.83 in.).

May 30th.—Present: six members.

FERTILISERS.—Mr. A. Jefferies, in reading a paper dealing with this subject, first referred to the introduction of artificial manures to the farming community, and expressed the opinion that the prosperity of the State and the agriculturists in particular was due almost entirely to the use of fertilisers. When superphosphate was first manufactured at Wallaroo, 25 years ago, he had seen the first truckload leave the works, and to-day thousands of tons were produced annually by the various companies. The science and research of the agricultural chemist had doubled the yield of the harvest, and it was being demonstrated that the quantity of superphosphate applied to the soil would have to be increased. Again, top-dressing pasture lands with artificial manures, in the wetter districts of the State, was no longer in the experimental stages, and remarkable results had been secured. He hoped to experiment with top-dressing on a small area during the present season.

NARRIDY (Average annual rainfall, 16.79 in.).

May 22nd.—Present: nine members.

SEEDING OPERATIONS.—In the course of a paper dealing with this subject, Mr. G. Johncock said that to make a success of seeding it was necessary to procure good seed, pure, and true to type. Soft wheats should not be sown in that locality.

because they were likely to be attacked by rust. He had found Florence a good early wheat. Currawa also yielded well. The aim of the progressive farmer was to produce a maximum crop at a minimum cost, and to do that he advised farmers to stick hard and fast to fallowing. Stubble land should not be cropped with wheat. He favored fallowing every alternate year, and believed that such a practice did not impoverish the land in that locality, because the average yield was improving, and most of the land was worked on the above rotation. The main points of a successful seeding were to "fallow as early as possible after seeding; keep the fallow well worked and have sheep on it, when necessary, to keep rubbish or weeds in check during harvesting work; work the fallow as late as possible before the hay harvest; work the fallow after every rain, either with harrows or an implement which will get over the land quickly; before seeding time, have all harness well oiled, and all machinery in order, so that there will be no loss of time; have well-fitting collars for each horse, and see that they are in good repair; work the team not longer than eight hours each day, and allow the horses 1½ hours for dinner; thoroughly pickle seed wheat or barley, and complete seeding by the end of June. All machinery not likely to be used again for some time should be housed in a good shed. Finally, attend meetings of the local Branch of the Agricultural Bureau (it was one of the greatest assets of the man on the land), and read the *Agricultural Journal*." In the discussion that followed, Mr. A. Pascoe said most farmers were too anxious to start seeding after the first rain. He thought it would pay to wait until the rubbish made a start, and there would then not be so many dirty crops. He thought most of the old wheats had given out on account of neglect. The Hon. Secretary (Mr. E. Richards) said he had grown the same wheat, namely, Currawa, seven years in succession, and it was yielding better crops now than when he obtained the original seed, thus suggesting that it was not necessary for farmers to change seed every few years.

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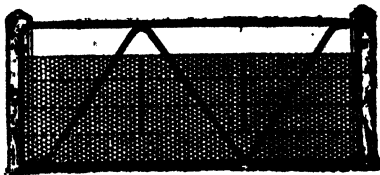


Fig. 132. Cyclone "N" Paddock Gate with round corners swung on face of posts. Can be had either rabbit-netted or with plain wires which make the gate sheep-proof.

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NORTH BOOBOROWIE (Average annual rainfall, 16.35in.).

June 2nd.—Present: six members.

THE BLOWFLY PEST.—A short paper was read by Mr. W. Brown. He said the greatest pest of the woolgrower was the blowfly. Sheep on lucerne pastures were troubled more than those that grazed on natural grasses. If proper attention was not given, many deaths would occur during the summer on account of flies. One of the most important operations to prevent the attack of flies was good and careful crutching. All sheep should be crutched early in the summer. Machines should be used for the purpose. They were much quicker, and they did better work than hand crutching. Sheep that had been struck with flies should be placed in a paddock by themselves, because once a sheep had been blown it harbored flies to such an extent that the whole of the flock soon became infested, and it was almost impossible to keep the sheep clean. During the past summer he had used a mixture of 1gall. of kerosine, 1gall. of used oil, $\frac{1}{2}$ of a gallon of Stockholm tar, and 1 pint of milk. Those thoroughly mixed and applied with an old brush or swab proved to be very effective. All dead carcasses should be removed from the paddock, and either burnt or deeply buried. Another good plan was to poison the carcass. One pound of arsenic mixed with 8galls. of water, and applied to the carcass would be the means of getting rid of thousands of flies. In the discussion that followed, Mr. Clark said the sheep should not be yarded more than was necessary during the summer months, because flies would be more likely to blow the sheep when in the yard than when they were running in the paddock.

WIRRABARA (Average annual rainfall, 18.91in.).

May 30th.—Present: 10 members.

THE TRACTOR ON THE FARM.—Mr. B. Borgas read a short paper on this subject, in the course of which he said the weather during the present seeding period had been very wet, and farmers had only been able to get on the land one or two days during a week. He had found that the tractor was a decided advantage over the horses, because with it it was possible to sow from 35 to 40 acres a day, whereas with horses only about 20 to 25 acres a day could be covered. Again, where a tractor was employed the machines could be taken on the land after a rain a day or two sooner than was the case where horses were used. During last season he had ploughed 400 acres at a cost of £35. The tractor had also been used to sow 300 acres of land and reap 400 acres of crop. The fallow had been harrowed and cultivated. He had also carted some of his wheat to the siding with the tractor.

GLADSTONE, June 5th.—A paper, "The Drift of the Rural Population to the Cities," was read by the Hon. Secretary (Mr. J. Bergin). Mr. Williams gave an interesting address dealing with the process adopted in the manufacture of superphosphate.

FARBELL'S FLAT, June 5th.—Mr. G. Powell contributed a paper, "Diseases of Wheat," members discussing the paper at length.

MURRAYTOWN, May 2nd.—Mr. F. Tregenza read a paper, "Food Values," and in the discussion that followed, Mr. K. Starr said that wheaten hay chaff had a tendency to make the cow put on flesh. Oaten chaff increased the milk flow. He favored crushing all grain before feeding it to stock. Mr. J. Cobiac favored barley for feeding to pigs. Mr. F. Schulz favored King's Early for hay wheat, and during many years' experience with same had never had any trouble with the beards causing sore mouths.

A further meeting was held on May 23rd, when Mr. E. Woolford gave an interesting account of methods of farming in the mallee areas.

NARBIDY, May 18th.—The Hon. Secretary (Mr. E. E. Richards) read a paper, "Power Farming." A lengthy discussion took place. Mr. W. Frick said one of the main objections to the tractor was the excessive price that had to be paid for spare parts. Mr. E. Richards said a farmer who worked a team could get out on to the land two days before the tractor, after a good rain in the winter. When the tractor "broke down," work was often held up until an expert arrived from Adelaide.

NELSHABY.—At the May meeting of the Branch the Hon. Secretary (Mr. A. M. Lawrie) read a paper, "The Drift of the Rural Population to the Cities." Mr. F. De Silver, in opening the discussion, said although the drift to the cities was to be deplored, he could not see any means of stopping it. Mr. A. M. Lawrie knew of instances in that locality where farmers were training their sons for other spheres of labor, and their reason for so doing was that the boys had no liking for the land. Again, where the farmer had several sons, he could not give them all a start on the land, because considerable capital was necessary to start with at the present time. There was also the possibility that education might have a tendency to draw the youth citywards.

REDHILL, June 8th.—The subject, "Useful Hints," was the means of arousing an interesting and instructive discussion. Many hints for labor saving were brought forward by members.

LOWER-NORTH DISTRICT. ADELAIDE TO FARRELL'S FLAT.)

KAPUNDA.

May 8th.—Present: 11 members and two visitors.

TOP DRESSING PASTURES.—Mr. E. Butler read the following paper:—"I have been top dressing my pastures for three years, and so convinced am I as to its success that I intend doing half of my property each year, if possible. I am quite confident that the Kapunda district, being, as it undoubtedly is, one of the most fertile in the State, with an average rainfall of 20in., can be made to produce one-third more after five years than it is doing now. I have noticed that stock show a great preference for top-dressed pastures over those not so treated, and it is therefore perhaps advisable to treat the whole of a paddock, as otherwise stock, and sheep particularly, will keep the feed in the dressed land short, and that growing on other portions of the paddock will not be grazed during the growing period, and so will become rank and unpalatable. The sheep will, as a necessity, fall back on this rank feed in the late summer and early autumn, and my experience is that they lose condition immediately. The advantages of top dressing whilst resting land for future wheat crops can be dealt with under four headings. 1. Encourages growth of clovers, which return nitrogen to the soil. 2. Enables heavier grazing, which returns organic matter. 3. Encourages root development, which makes land easier to work; a finer and better seed bed is the result. 4. Land is not resting or gaining in fertility unless growing a mat of grasses. So far as the Kapunda district is concerned, the advantages under headings 2 and 3 are the most important. Farmers are finding it increasingly difficult to fallow their land in such a manner that they will be practically assured of a good return of wheat. The system of bare fallow and wheat has been carried on continuously for so many years that the soil has been robbed of organic matter. The lack of root development whilst the land is resting prevents the farmers in most seasons working the fallow down to a fine tilth for fear of the land washing during a heavy rain, or running together and afterwards becoming baked on the surface. In determining whether it is possible to encourage the growth of better pastures in the district, one has to take into account not only the quantity of rainfall, but the soil's ability to retain moisture. In years of low rainfall the Kapunda district, with few exceptions, suffers less than any other north of Adelaide. Our soils, being mostly of a heavy clay nature, are eminently suitable to the establishment of many of the varieties of best-known pastures. We also have the advantage of a long growing period, a mild spring followed by a temperate summer. Experiment and find out which grasses suit your part of the district the best. Let each and every landholder run a small experimental field, and in the end you will find the bank balance increasing and life on the land more interesting. At the same time you will be doing a great service to the State. I have this year planted 17 acres of fallow with subterranean clover, with the idea of harvesting my own requirements of seed. I have also sown 1lb. to the acre on about 1,500 acres, which has been top dressed this year

with lewt. of 45 per cent. superphosphate. I have put down the following experimental plots:—1 acre of perennial red clover or cow grass; $\frac{1}{2}$ of an acre each of lucerne, perennial rye grass, cocksfoot, creeping bent, white clover, alaike clover, sheep's burnet or yellow trefoil, and chicory. I would like to thank the Department of Agriculture, and more particularly Mr. W. J. Spafford (Chief Agricultural Instructor), who inspected the district and my property, and recommended me to experiment with the above-mentioned grasses. The quantity of phosphatic manure to be applied to the acre in top dressing pastures is also a matter to be determined by experimenting. Keeping in view cost and results, I would advocate nothing less than lewt. of 45 per cent. to the acre every other year on natural pastures. I think you will find it profitable to increase the dressing, either by doing it every year, or by doubling the quantity applied every other year. If pastures are laid down with a mixture of any of the grasses I have mentioned previously, then I think it will certainly pay to use phosphates liberally. Even in the wet districts of South Australia, where subterranean clover is being best, this wonderful fodder would not carry one-third of the stock it is at present without a liberal application of phosphates." Mr. J. Kildea read a paper, "Seeding and Seed Wheat." He expressed the opinion that land in the Kapunda district required a good cultivation, but at the same time the soil should not be brought to a very fine tilth, because it was inclined to "cake." During the summer the soil should be kept open. He advocated applications of lime and stable manure.

•NANTAWARBA (Average annual rainfall, 15.90in.).

May 7th.—Present: eight members.

POULTRY AS A SIDELINE.—Mr. G. Herbert read the following paper:—"Of the various sidelines run in connection with farming, poultry is not only the most profitable, but at the same time it requires less work and attention than any other. Unless one proposes spending a certain amount of money on building extensive houses, &c., the birds will do better if allowed to run at large than penned in wire-netting yards. It is necessary to have a house for hens, and for the average farmer who prefers to keep, say, 200 to 300 hens, if there is a patch of bushy scrub as far as is conveniently possible from the stables, haystacks, sheds, &c., it will make an ideal place to erect a fowlhouse. This should be constructed of galvanized iron, and a small yard attached to the front will be found very convenient in which the fowls can be closed at night as a safeguard against foxes. The correct amount of room to provide in a house is at least 1 sq. ft. for each hen. For instance, a house built 10ft. square will comfortably accommodate 100 hens. There are several breeds of fowls that are good layers and good utility birds, but White Leghorns are well above any others for egg production and Black Orpingtons can be placed second. Many people favor a breed such as Black Orpingtons on account of their being good table birds, but so far as actual profit is concerned, one cannot do better than keep White Leghorns. Always start by selecting a good laying strain. It will pay to buy a breeding pen for the first year, say six or eight hens and a cockerel from which can be reared sufficient chickens to give a good start the next year. Such a pen will probably cost from 15s. to 25s. per bird. Another good plan is to buy, say, 100 chickens, which will cost from £5 to £7 10s. Unless cockerels are required for breeding, the best way is to dispose of them as soon as they can be identified. This is where White Leghorns score over other birds. A White Leghorn cockerel can nearly always be detected at a fortnight old. If it is kept for three months, the White Leghorn cockerel will by then be almost matured and begin to fatten, whereas a Black Orpington or a cockerel of any other table strain will have practically no meat on them until they are seven or eight months old. To rear 100 White Leghorn pullets to five and a half months old will cost 4s. per bird. Five and a half months is the age at which White Leghorn pullets commence to lay. Bearing 100 pullets to this age will cost £20, and for the next 12 months they will cost approximately 7s. per head, amounting to £55 to rear and feed for one year after they commence to lay. During the year if properly cared for, they should return 200 eggs each, and at an average price of 1s. 3d. per dozen, will amount to 20s. 10d. per bird, or £104 3s. 4d. for the 100 birds, making a total

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profit of £49 3s. 4d. on the 100 pullets for the year. For the second year these hens will still eat about the same amount of food, say 7s. per head, but for about four months of the year they will be moulting instead of laying. This period being when eggs are at their highest price usually, the average price of their eggs can only be reckoned at about 1s. 1d. per dozen. They will only lay about 12 dozen in the year, amounting to 13s. per head, or £65 for the 100 hens. After that year the egg yield decreases proportionally so that it will pay better to market them after the second year. At the end of the second year they will probably be worth 2s. to 2s. 6d. per head for table hens, if fat. The time needed to care for, say, 300 fowls, which number can be kept fairly conveniently on most farms, will be from half to one hour per day all the year round. The feeding is a very important part, and the easiest, simplest, and most economical way is to use dry mash for morning feeds and corn in the evenings. Hoppers can be constructed simply and effectively in which to feed dry mash, and if made large enough, will only need replenishing every three or four days. These must be kept in a dry place, and the trough from which the fowls feed must have cross bars so that the fowls cannot waste the grain. The sides of the trough should also be sufficiently high to prevent the birds rooting out the grain with their heads. Green feed is essential, but where hens are running at large, they can get green feed at their convenience for about eight or nine months of the year. If not, a lucerne patch is advisable. Failing fresh green feed, a sheaf of green hay can be put through the chaffcutter, and a tin of this chaff, with a gallon of boiling water poured over it and covered down over night with a few bags, makes an appetising meal and an excellent substitute for green feed. Fresh grain should be supplied every evening. There is always a certain amount of hay litter, chaff, and rubbish from around the stable, haystacks, &c., to be removed, and if this is tipped in the vicinity of the fowl-yard, it makes splendid scratching material, and all the grain in it is readily consumed. If the other grain is thrown in the litter in the evenings, the birds will consume what they want before going to roost. There will still be some grain left in the mornings, and this will help to keep the birds from the stables, stacks, &c. For hatching, I prefer the incubator. If a few broody hens are available when the incubator is started, hatching is simplified, because if there is a hen with a batch of chicks the same age as the incubator chicks, she will take 30 to 50 of the incubator chicks, and if kept in a small yard with a cosy roosting-box for a few days, she will rear them admirably and save any further trouble. Incubators are very simple, and if the manufacturer's instructions are followed, usually successful."

OWEN.

June 12th.—Present: nine members.

WHEAT GROWING.—Mr. A. N. Freebairn read a paper, and in the discussion that followed Mr. C. S. Marshman thought that it was better to work 200 acres well than to rush over 300 acres. He favored a rotation of bare fallow, wheat, oats, or barley, and then pasture. Mr. S. R. Harkness said great care should be taken in preparing the seed bed. The best germination would be secured when the seed was sown on a firm bed. In heavy soils and during a wet year (say 20in. rainfall), sheep could be used to eat off the crop and pack the soil. A short, fine-strawed crop would be less liable to the ravages of rust. Mr. W. J. Marshman thought there were possibilities of much higher yields. He was a strong advocate of ploughing in green feed, and favored fallowing in July and August. He did not favor heavy pickling. He had pickled with a 1 per cent., 2 per cent., and 3 per cent. solution, and sown wheat side by side, and found the lightest pickling the best. He was favorably impressed with dry pickling, the grain germinated more quickly, and produced a better, stronger, and more compact head.

SADDLEWORTH (WOMEN'S), (Average annual rainfall, 19.69in.).

June 9th.—Present: 11 members and three visitors.

RECIPES.—Fruit Biscuits.—Mrs. C. Frost supplied the following recipe:—Ingredients—3lb. of butter, 1lb. of sugar, 4 eggs, about 2lbs. self-raising flour, $\frac{1}{2}$ a cup of milk, $1\frac{1}{2}$ cups of stoned raisins, $1\frac{1}{2}$ cups of sultanas, $\frac{1}{2}$ a cup of currants,

1 piece of lemon peel, and 5 apples minced together. To prepare—Beat the butter and sugar, add eggs and milk, and then flour. Mix to a stiff paste and roll out. Spread the mince on half, and fold the other half at top. Cut into shapes, and bake in a hot oven. *Honey Biscuits* (Mrs. Beard).—Ingredients—1lb. of honey, 1lb. of sugar, 1 cup of hot water. Mix together over a stove, then add a large spoonful of butter or dripping, two teaspoonfuls of carbonate of soda, 1 teaspoonful of ground clover, or essence of cloves, and 1 egg. To prepare—Mix all together hot, and when cold add sufficient flour for cake. Best results are obtained if these biscuits are made one day and baked the next. Bake as a cake or biscuits, and put split almonds on top. *Currant Roll* (Mrs. Roberts).—Ingredients— $1\frac{1}{2}$ cups of self-raising flour, 1 cup of cleaned currants, $1\frac{1}{2}$ tablespoonfuls of butter, a pinch of salt, 1 tablespoonful of sugar, and enough milk for mixing. To prepare—Work the butter into the flour and salt, add sugar and fruit, then mix to a light dough, and roll out. Roll up as for roly-poly, and join the ends together with a small quantity of beaten egg. Brush the rest of the egg over the top. Bake in a moderate oven half an hour or more. While hot, serve with sauce or custard. When cold, spread with butter. *Brown Scones* (Miss Partridge).—Ingredients—2 breakfast cups of wholemeal, 2 breakfast cups of white flour, $\frac{1}{2}$ a teaspoon of salt, 1 teaspoon of carbonate of soda, 2 teaspoons of cream of tartar. $\frac{1}{2}$ a cup of cream, and about $1\frac{1}{2}$ cups of milk. To prepare—Put the wholemeal in a mixing bowl, sift the flour, salt, soda, and cream of tartar into it, and mix well. Add cream and milk enough to make a fairly stiff dough. Roll out, and cut any size required. Bake about 15 minutes in a hot oven.

LYNDOCH, June 4th.—The Hon. Secretary (Mr. J. S. Hammatt) read a paper, "The Drift of the Rural Population to the Cities," which aroused a lengthy discussion.

ROSEDALE, May 6th.—A paper, "The Drift of the Rural Population to the Cities," was read by the Hon. Secretary (Mr. F. H. Wolf).

A further meeting was held on June 4th, when Mr. H. Nettlebeck read a paper from the *Journal of Agriculture*, "Pickling Wheat." An instructive discussion followed.

WILLIAMSTOWN, June 5th.—To an attendance of 20 members and several visitors Mr. C. A. Harris (Instructor in Apiculture at the School of Mines) delivered an address, "The Anatomy and Physiology of the Bee," illustrating his remarks with lantern views.

WILLIAMSTOWN WOMEN'S, May 6th.—Mrs. Pinson read a paper, "Care and Nursing of Children Suffering from Measles." Mrs. Gower also read a paper, "The Home Medicine Chest."

WILLIAMSTOWN WOMEN'S, June 3rd.—Fourteen members attended the June meeting, at which Mrs. J. Hammatt gave a Rose Pruning Demonstration.

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YORKE PENINSULA DISTRICT.

(TO BUTE.)

WAURALTEE, June 9th.—The first meeting of the Wauralte Branch was held on June 9th. Officers were elected, and it was decided to hold meetings on the first Tuesday in each month.

WEAVERS, May 11th.—The Hon. Secretary (Mr. H. W. Cornish) read a paper, "Power Farming," and a general discussion followed.

WEAVERS, June 8th.—Fifteen members attended the June meeting, when an instructive paper, "Fallowing," was read by Mr. L. A. Slade. A general discussion followed, and a programme of meetings for the ensuing year was arranged.

WESTERN DISTRICT.

BUTLER (Average annual rainfall, 16.61in.).

May 13th.—Present: 10 members and visitors.

Mr. C. Jericho delivered an address, in which he referred to the experimental plots which for nine years had been conducted on his holding. He suggested that the tests should now be changed from manurial experiments to the testing of the most profitable fodders for the district. Messrs. Butler and Hughes agreed. The general opinion was that nine years of experimenting with heavy dressings of super and the tests having proved a success, should convince any farmer in the district to adopt heavy dressings. Farmers who had had their land clear for some years and applied heavy dressings of super should now sow clover for sheep feed. Mr. Jericho had found it advisable to sow lucerne among the wheat, about 1lb. of seed to the acre, which proved a valuable fodder if summer rains fell. Freezing works had been established at Port Lincoln, and every farmer should do his best to support it by growing feed and raising livestock. Some members did not think it advisable to keep many sheep before the Tod River water scheme reached the district.

CHARRA.

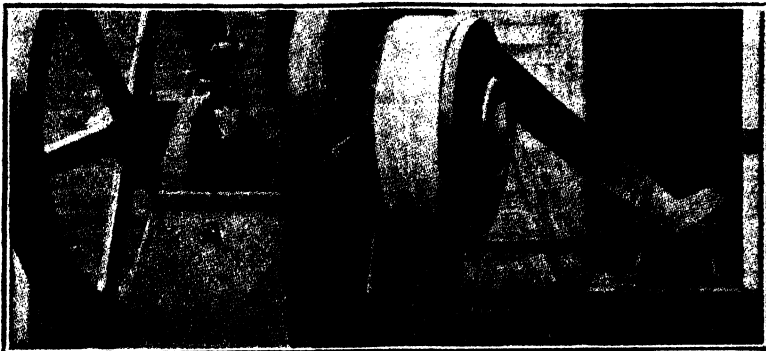
May 6th.—Present: 10 members.

LAMB RAISING.—"For the average season," said Mr. A. Haseldine in the course of a paper dealing with this subject, "I consider about the 20th of December the best time to mate rams with ewes." The lambs should then be a fair size and have a good constitution by the time the grass-seeds became troublesome, he continued. For that district he favored the Merino. If it was decided to breed summer lambs, he advised crossing with the Dorset Horn. That class of lamb grew quickly and could be sold before shearing. To ensure a good lambing, he recommended three rams to every 100 ewes. Where foxes were troublesome, that would prove a distinct advantage, inasmuch as the lambing period would be considerably shortened. If the sheep were yarded at night the lambs that were dropped in the yard should be yarded with their mothers and fed on good green hay. That would strengthen the lambs and keep them in safety from hawks, crows, and foxes. Lambs should always be shorn before grass-seeds fell. During the dropping season all carcasses, &c., should be destroyed, and if ewes had to be assisted, care should be taken to sterilise all instruments.

CHARRA.

June 3rd.—Present: 12 members and visitors.

FENCING.—Mr. G. Denton, in reading a paper on this subject, said that for a good substantial fence, sound posts not less than 5in. in diameter should be selected. These should be placed 15in. into the ground, and spaced about 12ft. apart; 3ft. 8in. of the post should remain above ground level. One post in every 35 should be a strainer let into the ground about 4ft. A boundary fence should consist of 3in. netting, supported with a No. 8 galvanized plain wire and one barb. If the barb was laid along the top of the post and tied down tightly, it would



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make a neat fence. Division fences should be made sheep proof, and for that he recommended four plain No. 12 galvanized wires placed 7in. apart, with a barb 14in. above the top plain wire. Good fences meant well-behaved stock and good neighbors. Mr. C. Barnett thought posts should be put 20in. in the ground. Several members did not agree with the writer in respect to tying the wire to the top of the posts, because the wires were more liable to pull out when the posts became old.

COLLIE.

May 23rd.—Present: 17 members.

COLT BREAKING.—Mr. J. Wright read the following paper:—"Run the colt into a small yard. Procure a long stick with a piece of bag tied on the end. Corner the animal and rub it over the neck and withers until it becomes quiet. Approach the colt carefully and pat it with the hand, but if it breaks away, make it run around the yard until it will stand reasonably steady. Tie a rope round its neck and lash the colt up very shortly to a strong post. Then carefully place a pair of strong winkers on it and teach it to lead. This can be repeated two or three times, after which put it in the body of a heavy wagon team between two strong, quiet horses, with a rope from its neck to the neck of each quiet horse. After the colt has been worked a few times in a wagon it can be put into chains in any implement requiring six or eight horses. In breaking a light horse it should first of all be driven into a yard about 40ft. in circumference. A rope or whip should be used to make the horse run around the yard. The colt should not be hit unless it is obstinate, the better plan being to hit the ground behind its heels. This can be continued until the animal begins to sweat, and then, keeping on its near side, try to put it on the neck and back. When the colt has become accustomed to the 'breaker,' try to slip on a bridle without reins, first rubbing the animal around the ears. When this has been done, put the bit in its mouth and then tie up the colt, put on a strong surcingle, pass a rope rein from each bit ring, and join them around the surcingle on to the back. Care should be taken to see that the reins are not too tight and not too loose, and that both reins are of the same length. Also, put the crupper in position. The colt can then be left for the day, but the tackle should be removed at night. Give the animal a good feed and drink at night, and do the same in the morning. The tackle can be put on again and the horse left for the day. Repeat this for three or four days, by which time the colt should be quiet and ready for the saddle. Speak to the horse whilst the saddle is being put into position. Tighten the girth, and then fix a long rope to the bit and allow the horse to go around in a circle. Repeat this performance two or three times until the horse becomes accustomed to the saddle, and then on a hot day it can be ridden. If a crushpen is available, it is advisable to mount the colt bareback so that it will become familiar with the weight of the rider. When the horse has been saddled and is ready for riding, a good strong surcingle should also be put on. If the horse has been broken in with a crupper it is just as well to have one on, but if it makes the animal frisky, it should be left off. Have a good monkey on the saddle, and while someone holds the horse steady, spring into the saddle carefully but quickly, taking care not to kick the horse on the rump. The horse can then be led around the yard at a walk. Repeat this performance at least twice, then take the horse out into a soft paddock, get someone to hold its head steady and spring into the saddle. Let the horse walk for a while, and then hold the reins tightly and make the animal trot, but do not allow it to get its head down. The horse can then be made to canter at the discretion of the rider. For the first twelve rides on a young colt always keep wide awake, even though the horse appears to be quiet. Never take a young horse cheaply." Mr. E. Wheaton then read extracts from the *Journal of Agriculture*, and a keen discussion followed.

ELBOW HILL (Average annual rainfall, 11in. to 12in.).

May 7th.—Present: nine members.

BUREAU RETROCESSION: ITS CAUSES AND SOME SUGGESTED REMEDIES.—In the course of a paper dealing with this subject the Chairman said lack of enthusiasm which was sometimes in evidence regarding Bureau matters might

probably be due to the indifference of the members. Attendance at a meeting was responsible for more than the majority of members realised. The larger the attendance and the more diversified the opinions expressed, the better the resulting discussion would be. The producers on the whole were conservative, who preferred their own methods of accomplishing success or failure, rather than co-operating with other producers for the good of all concerned in the industry. Farmers should act in concert with each other, instead of pursuing one line of action, and look ahead to that goal which would be most suitable and most profitable for that vocation from which they obtained their livelihood. The Agricultural Bureau was a non-political institution, and with every producer a member, they could meet on common ground to improve their knowledge and educate each other. As at present constituted, the Bureau did not permit of religious or political subjects being discussed. That was perhaps a wise provision, but the activities of the Bureau from a farmer's point of view were necessarily restricted, and many subjects which concerned their welfare could not be discussed. The Bureau could be made a place where matters such as co-operative marketing and buying could be discussed, and where co-operative sentiment could be fostered, and unanimous decisions resolved as how to act for the common good of the industry. He did not suggest that the Bureau should become a political or co-operative institution, because there were organisations already in existence, both political and commercial, formed for the mutual welfare and protection of the producer, but a Branch of the Bureau could well be a place where they could have an understanding as to what most affected their industry. The matters discussed at present were those in connection with the ordinary routine of farm work, and those matters failed to arouse animation at meetings, and particularly with those who did not attend regularly. To revive interest, he suggested an occasional debate instead of a paper. Also, once in a while, meeting at a farm in the afternoon. Again, instead of business in the evening, a social evening with the ladies present could be arranged. Now that distance was no hindrance owing to the use of the motor car, he suggested

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that neighboring Branches should visit one another. For the office-bearers they should endeavor to elect the most capable of the members of the Branch. Summer recesses caused by the busy harvest time should be as short as possible. Meetings should be held regularly and to the stated time of meeting, and each member should speak when the opportunity occurred. There was a staff of experts engaged in agricultural research and experimental work, whose services were at the disposal of the Bureau, but, generally speaking, he did not think they made sufficient visits to the rural population. The experts could also undertake a closer supervision of Crop Competitions. So far as Eyre's Peninsula was concerned, he believed a more definite knowledge of the soil contents was required, and to impart that information to the landholder should be one of the chief concerns of the Government. Nothing short of a thorough soil survey would meet the circumstances, and to accomplish that, an additional staff of qualified officers should be appointed to undertake the work. The benefits that would accrue from a thorough knowledge of the soil would greatly increase the national wealth of Australia. He also recommended a closer association of the Government agricultural staff with the Agricultural Bureau system.

ROBERTS AND VERRAN.

May 7th.—Present: nine members.

DESTRUCTION OF RABBITS.—In reading a short paper dealing with this subject, Mr. A. Smith said fumigating and trapping were the best methods of destroying rabbits. To use bisulphide of carbon successfully, most of the burrows should be blocked, cotton waste soaked in the poison should be pushed down the remaining burrows, and all holes should then be closed. Steel traps should be set on top of the burrows to catch any stray rabbits. The poison-cart had been used with success in many districts. To lay baits, the best plan was to drive a plough around the paddock and drop baits into the furrow. The tender roots of Scotch thistles made excellent baits. The baits should be soaked in strychnine before being laid. The latter method should be employed when green feed was scarce, January to March being the best months. In the discussion that followed, Mr. W. Whittaker said wire-netting traps were useful for catching rabbits. Poisoned wheat placed near the burrows was also an effective poison. Mr. M. Masters favored the fumigator, and said a tractor could be used for the purpose by putting the exhaust-pipe down the burrow and blocking all outlets. Mr. G. Smith favored the fumigator, because it was not dangerous to stock as was poisoning. He did not favor ploughing in burrows. Mr. H. Simmons said poisoned thistles were most effective in killing rabbits. Mr. B. Evans said every opportunity should be taken to destroy rabbits and poison used when feed was scarce. The fumigator could be used all the year. Mr. C. Masters favored the use of the fumigator. The Hon. Secretary (Mr. B. Evans) then read a paper, "The Drift of the Rural Population to the Cities," and an interesting discussion ensued.

RUDALL.

June 4th.—Present: five members.

SEEDING.—A short paper dealing with this subject was read by Mr. J. Smith. He said before commencing seeding operations, the horses should be in good working condition, all harness repaired, all implements thoroughly overhauled, and the seed cleaned. Land that was ploughed during seeding should be worked to a depth of 1½ in. to 2 in. It was advisable to get new land in early, but it was best to wait for rain before working old land. Oats should be sown during April, and wheat in May. He favored a "combine" for seeding clean fallow, but in dirty land that machine was not able to cope with large weeds. All land should be harrowed before and after the drill. Seeding should be completed by the end of May, and all shoots cut immediately after. In the discussion that followed, Mr. B. Crabb thought seeding could be profitably prolonged until June in that district. The President considered the combine an ideal implement for seeding if followed by a good set of harrows.

TALIA.

May 2nd.—Present: 11 members and two visitors.

TRACTOR FARMING.—Mr. D. Lewis, in reading a paper dealing with this subject, expressed the belief that the tractor would enable the farmer to increase production and add to the revenue of the holding. With the tractor, ploughing and the preparation of the seed-bed could be done without delay at an opportune time. It was possible for a farmer to increase his crop acreage with very little additional expense. Belt work, for which most tractors were specially adapted, formed a part of the power requirements of every farm. By replacing working horses, the tractor made a certain amount of land available for raising sheep, cattle, &c. He had worked a tractor through the last harvest, and the following figures represented working costs for reaping 280 acres:—Kerosine £12 16s., oil £2 12s. 6d., petrol 7s. 6d., grease 15s. 6d., total £16 1s. 6d., the acreage cost working out at about 1s. 2d. per acre, or approximately 3d. per bag in a 15bush. crop. As to the durability of the tractor, he believed that with reasonable care and attention an efficient tractor would last at least 10 years. His tractor to date had performed the following work:—Ploughing 400 acres, drilling 320 acres, harrowing 320 acres, reaping 400 acres, with total cost for repairs of 8s. 4d. The working cost of ploughing was about 1s. 6d. per acre for kerosine, oil, and grease. The writer considered that at the present working costs a tractor was more economical to operate than horses. It not only made better cultural operations possible, but it enabled the farmer to do all the important field work more quickly, thus conserving time for better farming. It enabled one to do more extensive farming and to do it more intensively with less labor."

YALLUNDA FLAT.

June 4th.—Present: 12 members and three visitors.

Mr. H. Butler, in the course of a paper dealing with the subject, "Pig Raising: A Profitable Side Line," expressed the opinion that the Mid-York sow crossed with a Berkshire boar would be the best type of pigs for that district. They would mature quickly. He favored keeping four sows which should farrow at regular intervals, so that when one lot was marketed the next would be ready for topping up. A very successful plan was to have three small paddocks, one sown with peas, one with barley, and one with rape. In reply to a question as to what corn was best for topping up, Mr. Butler favored barley and peas. The speaker said the pigs should be marketed when they weighed about 100lbs. to 120lbs. A good discussion followed.

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YEELANNA.

May 16th.—Present: 13 members.

SHEEP AND STINKWORT.—Mr. W. Wemyss, who read a short paper dealing with this subject, mentioned that he had examined numerous sheep, to ascertain whether the sheep were killed by eating stinkwort when the plant was not in flower. From observations, he had found large masses of dry fluffy stuff in the blind gut, thereby causing a stoppage, and subsequently the death of the animal.

LIPSON, May 2nd.—The Hon. Secretary (Mr. W. Blackler) read a paper, "Tractor v. Horses," which aroused a keen and instructive discussion.

MOUNT HOPE, May 9th.—Mr. F. Masters (Manager of the Eyre Peninsula Freezing Works) delivered an address dealing with the Freezing Depot at Port Lincoln. A paper, "Destroying Weevils in Sheds," was also read and discussed.

PETINA, May 23rd.—Mr. H. H. Howard read a paper, "Organic Matter of the Soil," and an interesting discussion followed. A gold medal was presented to Mr. G. Robert, who had been awarded second prize in the 1924 Petina Crop Competition.

PETINA, May 2nd.—The meeting was devoted to discussing and arranging various matters in connection with the Crop Competition for the ensuing harvest.

WIRULLA, May 20th.—A paper, "The Drift of the Rural Population to the Cities," was read and discussed. Fifteen entries were received for the Crop Competition for the 1925-26 Harvest.

WUDINNA, May 16th.—Seventeen members attended the May meeting. Mr. J. H. Butterfield read a paper, "Tractor v. Horses." A paper, "Seeding Operations," was contributed by Mr. C. Bassham. The papers aroused a keen discussion.

EASTERN DISTRICT.

(EAST OF MOUNT LOFTY RANGES.)

AGRICULTURAL BUREAU SHOW AT GLOSSOP.

The usual monthly meeting of the Glossop Branch took the form of a show of produce, &c. The Hon. Secretary (Mr. G. C. Jackson) has supplied the following report:—The successful carrying out of this function entailed much hard work on the part of the committee, and Messrs. Hatch and Dawson (President and Vice-President) are to be congratulated. The idea which the promoters had in view was for every man to exhibit his produce, no matter what its quality or lack of it. This, it was thought, would make the exhibition of practical educational value; and such proved to be the case. No exhibit entrance fee was charged, and no prizes were offered, certificates only being granted. The catalogue was paid for by advertisements, the hall lent by the Irrigation Commission and decorated gratuitously by the ladies. An entrance fee was charged to adults only. A musical programme was provided by an orchestra composed of Bureau members, and refreshments were available. Mr. McMillan, M.P., opened the show. More than three hundred persons were present, and already one hears on every hand the improvements which will necessarily be made "next time." The flower section was pleasing in variety, and showed what the ladies could do; but the vegetable section was a revelation. Marrows of 70lbs., carrots of 2lbs. each, onions 2lbs. each, &c., showed what rich soil, combined with care, would grow. The dairy section was disappointing; but fruit blockers are not cowkeepers. The fruit section delighted the judges, Messrs. Lewis and Chapple. They enthused over it to all inquiries. The ladies competed in an excellent cookery section. The preserve section was well contested. The schoolwork was in a class by itself. Prizes were offered in this section, to stimulate future blockers to Bureau work, and £11 will be divided among the scholars. The art section occasioned much comment, and presented an unexpected task to the judges. All members are agreed that on next year's programme must appear the item "Glossop Show."

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MONARTO SOUTH (Average annual rainfall, 14in. to 15in.).

June 5th.—Present: 16 members.

SIDE LINES ON THE FARM.—"To make the most out of the farms in this district, we need to go in for more than wheat growing alone, and the first side line that appeals to me is keeping sheep," said Mr. G. Paterson, in a paper dealing with the subject "Side Lines on the Farm." He considered the Merino the best all-round breed of sheep for the farm. He favored a large plain-bodied ewe with a good-length staple of clean, bright wool and a clean face. To keep up the standard of the flock, he suggested culling every year, classing out all very heavily wrinkled and short or very heavy woolled sheep, so that a farmer with 200 to 400 sheep could make a more even class of wool, and not make his small clip into too many classes. It was a bad policy to keep more sheep than could be fed properly. When there was a shortage of natural feed, the sheep should be hand fed and kept in good heart until natural feed grew. He preferred early lambs, and thought that two rams should be allowed for every 100 ewes. It was not advisable to run rams with the ewes all the year, because many out-of-season lambs would be dropped. Cows and pigs should be worked together. The objection to cows was very often due to the work which they entailed. If properly managed, they paid well, and gave a fairly good return for the labor expended. Cows should be given a small quantity of bran frequently, to keep them in good health and stimulate milk production. Crushed oats were also good for dairy cows. Whatever breed was favored, farmers should go in for the milking strain, and as they sent cream to the factory, beasts that were not good creamers should be culled. With cows on the farm there always was a good deal of waste, unless pigs were kept. When purchasing slips, he preferred animals eight to 10 weeks old. If the pigs were to do their best, they should be fed regularly three times a day. They should be given as much as they could eat, but not more than enough at one feed. Stale food in the trough became sour, and had the effect of making the pigs go off their feed. The animals should also be provided with plenty of bedding. Baconers should be sold when they turned the scale at 130lbs. dressed weight. Poultry helped to keep the house going, and he favored an egg-laying strain, mated with pure-bred roosters. The best time to hatch chickens was during the months of September and October, in order to raise winter-laying pullets. Eggs at that time were a good price, and the older hens were moulting. Wheat was one of the main feeds on the farm, but some of the prepared poultry foods on the market assisted egg production. The fowls should also have plenty of clean water available at all times. An interesting discussion followed.

MURRAY BRIDGE.

February 18th.—Present: 25 members and visitors.

Mr. Rankine (District Stock Inspector) read a paper, "Some Ailments of Farm Animals."

DAIRY SANITATION.—At a meeting held on May 20th, Mr. H. J. Apps (Assistant Dairy Expert) delivered an address, in the course of which he stressed the point that in the dairying industry the golden rule was "cleanliness." Without strict observance to every detail as regards cleanliness, trouble was bound to arise, and often meant the loss of much revenue to the dairyman. In South Australia there were no means to compel the cowkeeper to comply with any regulations regarding the standard of sanitation, &c. Therefore, the subject resolved itself into the matter of simply offering advice. The indifference displayed by dairymen was often influenced by the method adopted by near-by farmers, who probably did not pay as much attention as they should to the conditions under which milk was produced and handled, and yet secured the same price. But the day was approaching, especially as quality counted for so much, when the product would be paid for according to grade. Many factories already paid on grade for cream, but in some cases cream was not graded as rigidly as was essential to drive home to the supplier the real necessity for strict attention in the matter of handling and caring for the raw product. It was imperative that milk and its products should be clean in flavor and free from contamination, for it could not be forgotten that it was a food for human consumption. Yet how many gave it the attention it warranted. It would surprise some dairymen to realise

the amount of dirt and the high bacterial count the milk contained. Milk improperly handled was often the carrier of certain highly infectious diseases, such as typhoid and scarlet fever, diphtheria, and tuberculosis. A perfectly normal whole milk might be produced on the farm and still become a dangerous food because of faulty methods in handling, transportation facilities, and storage. Milk, as it existed in the udder, was free from germ life, but after reaching the milk bucket it contained a considerable number of bacteria. The chief sources of contamination were the cow, the milker, sanitary arrangements of the shed and yard, and utensils. The cow herself was the greatest means, not that she always secreted milk containing germs, but because germs were present in the hair which covered her body, and many of them during the milking process gained access to the milk. The milker's clothes were often the means of contamination. An ill-ventilated shed contained air heavily laden with bacteria, which, being heavier than the air, gradually settled down, and then some found their way into either the bucket or the milkean. The dairy utensils, generally, were a great source of contamination, perhaps due to improper cleaning or placing where exposed to infection. The best means of combating bacterial contamination was cleanliness. The amount of dirt contained in milk did not in itself injure the milk so much, but it invariably acted as a food upon which harmful bacteria thrived, and finally acted upon the milk. The cow was the dominant factor in producing an ideal milk if she was healthy and kept under sanitary conditions. The work of obtaining a purer milk was then somewhat simplified. The long hair covering the base of the udder and lower parts of the flanks should be clipped. The feed of the cow should be sound, free from mould or semi-decayed matter, and the drinking water should be clean. Every effort should be made to prevent cows from wading through mud or dirty water, because under such conditions the udder and teats were a grave source of contamination. Running water was the ideal method of supplying the cow for drinking purposes. Where troughs were used they should always be kept

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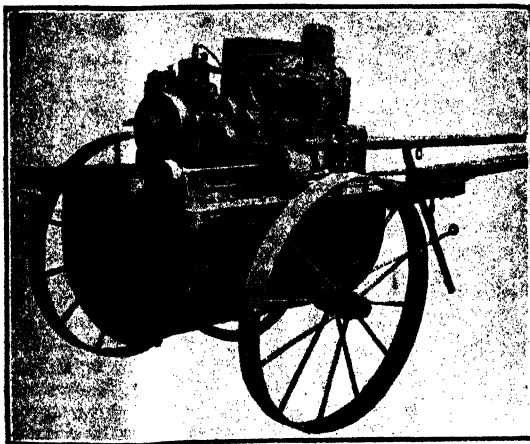
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clean, and so situated that bog holes were not made around the trough through the cows constantly going to and from it. It was of paramount importance to see that the cowyard was well drained and possessed a good flooring, either paved with stone or concrete. The weight of scientific evidence went to prove that utensils were one of the principal sources of contamination. In the first place, all utensils should be seamless, or, failing that, all seams should be well finished with solder. The old-fashioned petrol tin should be discarded, because it was a hotbed for bacteria, and became more or less rusty after a little wear. To ascertain whether the petrol tin was a sanitary receptacle, he advised running a penknife around the seams and observing the decomposed milk which would be collected. Nothing would contribute so much to the cause of pure milk than sanitary milk buckets, cans, and strainers. One of the best milk buckets to use was the "hooded bucket," which had two-thirds to three-quarters of the top covered, and was so constructed that it would be easily handled. In order to demonstrate its efficiency, the following figures from three different farms from a test made by the Californian Department were quoted:—Bacteria, per c.c.—Open pail, average 33,150; covered pail, average 1,740. He noted that the factories were gradually installing mechanical washers, which should go a long way towards improving matters. Under the old system of factory washing the cans were more or less moist and imperfectly cleaned. When moist cans were returned to the farmer it had been the means in many cases of increasing the bacterial count of milk. The introduction of the mechanical washer would control, in a large measure, the occurrence of ropiness, &c., in milk. The dairy room should be situated some distance from all buildings, in a position where there was a free circulation of air. The walls, ceilings, and floors, &c., should have a smooth surface and permit of easy cleaning. The doors and windows should be supplied with flyproof screens. Every effort should be made to keep the dairy as cool as possible, by having air spaces between the walls and double roofs. Many farms used cellars, some wholly underground. Cellars were mostly cool, but were somewhat difficult to air, and products stored might readily become inoculated with moulds and the flavor of the raw product develop a musty taste. On the other hand, half underground buildings had the advantage of being aired. Luckily, plenty of limestone was available in the State, and farmers, therefore, were enabled to erect a substantial structure at a small cost. In cases where a double roof was not made, the top of the ceiling should be packed about one foot deep with seaweed. In the majority of cases milking machines were not cleaned as they should be. One had only to run a penknife around the seam in the teat cup to prove that. All parts should be taken to pieces and cleaned at least once a week. One of the best solutions to use was 15lbs. salt in 10galls. of water, to which was added 4ozs. of chloride of lime. The lime should be renewed about once a week, or a 12oz. tin of chloride of lime dissolved in a gallon of water, and a pint of this solution added about every third day to about 20galls. of water. In all cases they should suck a bucket of hot water through each set of teat cups before commencing to milk.

PARILLA WELL (Average annual rainfall. 16in. to 17in.).

June 15th.

TAILING AND MARKING LAMBS.—In the course of a paper dealing with this subject, the Hon. Secretary (Mr. E. Slater) said lambs should be from four to six weeks old at the time of marking. If left any longer, the lambs suffered more from the operation, and received a great check in growth. If lambing was spread over a period of several weeks it was advisable to make two markings, with several weeks between each operation. The best plan was to arrange so that the ewes lambed in a short period. A fine, mild, warm day should be chosen for the work. Cold and frosty weather should be avoided. The sheep should be kept in a paddock handy to the yards, because the less knocking about the lambs received prior to the operation the better it would be for them. The ewes and lambs should be yarded as quietly as possible, and allowed to settle down before work was commenced. It was a good plan to run the sheep through the draft, and separate the lambs from the ewes, putting the lambs in a small yard, where they could be more easily caught than if mixed with the older sheep. The ewes could be left in the yard adjoining, then as the lambs were marked they could be let go in the

yards containing the ewes. A strong rail in the fence at a convenient height was all that was necessary on which to hold the lamb. The equipment necessary for the operation were earmarks, a sharp, clean pocket knife, and a good set of teeth. A proper castrating knife with instrument for drawing the testicles attached could be procured, but he considered drawing with the teeth a quicker method. The earmarks, knife, sharpening stone, and a tin of disinfectant should be placed in a convenient position. With small flocks, one person could usually do the earmarking, tailing, and cutting, whilst two men were employed to catch the lambs. With a large flock it was necessary to have several catching and one earmarking all the time to expedite the job. The operation of marking was then described as follows:—"The person catching, takes hold of the lamb, having a fore and hind leg in each hand, places the rump of the lamb on the rail, hind legs conveniently apart for the operating, with the back of the lamb firmly against the chest, and its head coming on to the shoulder. Earmark first; ewes on the off ear, and wethers on the near, or *vice versa*. Then cut off the end of the purse, and with the first fingers and thumb press the testicles out, so that they can be caught hold of with the teeth; then draw them both gently out. Failing to get both out, it is a good idea to leave the tail of the lamb longer than the others, so that it can easily be found when the lamb has made good growth, and used for rations, otherwise it will become a nuisance to the flock. Then tail the lamb. If you cut the tail off first, blood will spurt all over you for the rest of the operation. Before cutting the tail, feel with the knife for the joint; if a cut is made, and the bone encountered, cut at the joint above, not below. For ewes, have the tail fairly short; wethers can be left a joint longer. I am not in favor of a long tail. When the operation is completed, the lamb should be carefully put down in the yard with the ewes. When tailing, the operator should throw the tails of the different sexes in different heaps; an easy count is then obtained. When the marking is finished, put the ewes and lambs in a handy paddock. Do not be in a hurry to rush them off a long distance." Mr. R. Cockburn then gave an address, "Top Dressing Pastures."

PINNAROO (Average annual rainfall, 16.74in.).

May 24th.—Present: eight members.

MAKING THE FARM PAY.—Mr. W. Kelly, in the course of a paper dealing with this subject, said he was not in favor of too many side lines. Unless there were boys or girls to do the work, dairying could not be carried on profitably on the farm, because the farmer would not have time to work and look after a team and milk cows. The farmer who devoted all his time to wheat, wool, and lambs would show best returns. Seeding should be finished by the middle of June. Early fallow, he believed, was the first step towards success in wheat growing. He thought it would often be better to fallow a smaller area, and give that an extra working. It had been the custom of many to leave a few hundred acres of land for grazing, but by drilling in oats and super on half of that area they would get more feed, and more land could be fallowed, or the number of sheep could be doubled. Another point to which he wished to draw attention was the class of sheep kept on many farms. His opinion was that the highest priced sheep would ultimately prove the cheapest. In the discussion that followed, Mr. F. Jones agreed that wheat and sheep were sufficient to occupy the time of the average farmer. Mr. S. Bone contended that cows were a good proposition if labor was not expensive. Mr. H. Fewings was also of opinion that a smaller area of fallow should be handled, and more attention given to it than was the usual custom. He said pigs were a profitable side line. They did not require a great deal of attention. Pinnaroo sheepowners should cull their flocks to a far greater extent. Mr. P. H. Jones said one or two cows on a farm were desirable, but it was a mistake to keep too many. The Pinnaroo district was admittedly not a dairying district, because the period over which feed was sufficiently succulent to enable them to obtain the best result from cows was comparatively short. The animals would have to be fed for the remainder of the year. Mr. Jones thought the reason for late seeding in the Wimmera was the fact that summer fallowing was possible there. The land could thus be kept clean. Summer fallow had not

proved satisfactory in the Pinnaroo district. If seeding operations were finished late, farmers could not get on with the fallowing in time to finish early. Early fallowing was essential to success. Mr. F. Welham referred to the value of stable manure.

YOUNGHUSBAND.

May 14th.—Present: eight members.

Mr. H. Gowling read a paper, "Most Desirable Type of Horse for Farm Work in this District," in which he expressed a preference for the medium draught animal. Mr. G. H. Mann read an article, "The Wheat Pool."

YOUNGHUSBAND.

June 4th.

DIGESTIVE TROUBLES OF THE HORSE.—Mr. F. Macrow read the following paper:—
 "On coming into the stable the farmer sometimes finds one of the horses lying down in its stall and generally 'off color.' If he leaves it out of the team that day, it may get better, and it may not; but 10 minutes rubbing of the flanks, with or without a good liniment, and a drench of a couple of beer bottles full of strong coffee, would be almost sure to set things right and probably save the horse's life. Horses do not generally lie down in the stable unless there is something wrong with them. The lining of the lips and nostrils is a light pink in color and moist to the touch when the animal is in good health. A bright red or pale color and dryness of the nostrils are signs of trouble. The eyes should be bright and clear, not dull or glazed, as in cases of colic and inflammation. Heavy, labored breathing may be a sign of digestive trouble. The coat should be smooth and glossy, not rough and damp, as in cases of indigestion, &c. Every horse has, more or less, its own peculiarities, and some are naturally tucked-up looking or dull and mokey, just as some will lie down in the stable when only lazy. The main digestive troubles are sand, colic, inflammation of the bowels, worms, and indigestion. If a horse is suffering from worms, they may or may not be noticed in the manure, but his general run-down appearance should put one on the watch for them. Fowlers' solution of arsenic should be given morning and evening, in tablespoonful doses, for a fortnight, then stop for a fortnight, and repeat for another fortnight. A horse suffering from indigestion will show symptoms not unlike those of worms, a rough coat, tucked-up belly, and general dullness and falling away in condition. If any long pieces of straw, &c., are noticeable in the manure, the teeth should be examined, and any irregularities remedied, either by rasping or extraction. Ten drops of nux vomica on the tongue twice a day will act as a tonic and help set things right. Inflammation of the bowels is often the result of colic or sand, and the horse will be probably lying down, and very restless, with heavy labored breathing and dull eyes. It may get up and stand for a while, but soon goes down again. Hot fomentations and rubbing of the belly and a dose of 10 drops of tincture of aconite every hour while the pain is severe will be useful. Bleeding is a help, but care should be taken in the operation, and not more than three quarts should be taken from the neck or arm veins. Colic is a very common trouble amongst horses, and is one which, if treated at the outset, is not, as a rule, anything to be afraid of. The horse is uneasy, continually looking around towards the flanks, and will get spasms of pain, in which it will lie down or probably roll, and then get up, or perhaps remain lying quietly for some time with the head turned towards the flanks. The flanks should be rubbed well, with liniment preferably, every hour or so, and a good stimulant, such as a quart of strong coffee, grounds and all, should be given. Enemas of warm, soapy water should be administered to relieve the bowels. Colic is chiefly due to weakness of the muscles of the bowels, and rubbing the flanks is the main item of treatment. Horses suffering with sand show much the same symptoms as those troubled with colic, and, in the early stages, can be treated the same way. But, in this trouble, rubbing the flanks is of more importance, owing to the fact that the muscles of the water gut are too weak to lift the sand up to the outlet, which is considerably higher than the bottom of the gut, and only by strengthening these muscles can one hope to get rid of the

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sand. Linseed oil and honey and milk are good for softening the sand, but without the rubbing would never get rid of it. In bad cases, a rail can be used by two men, one each side of the horse, for rubbing. Coffee can be given as a stimulant to the bowels, and on recovery, 10 drops of nux vomica twice a day for a week will help to strengthen the animal. As a rule, it is a good plan to feed horses on hay for a while when they first come in for work, because if they have small quantities of sand in them, this feed will give them a chance to get rid of it. In all digestive troubles, horses will lie down, whereas in breathing diseases they will stand. Most digestive troubles are due to loss of tone in the muscles of the various organs and, therefore, if that tone is restored by massaging, recovery can be expected. Feeding and watering have an important influence on the health of the horse, and the animal should never be watered directly after a meal. This washes undigested food from the stomach to bowels and so causes indigestion. There should never be more than enough for one feed put in the manger at once. Over feeding is a frequent cause of colic. In all the diseases described, when the animal is in severe pain, it is advisable to give a pain killer of some description, and chloral hydrate will be found to give good results in doses of $\frac{1}{4}$ an ounce dissolved in a pint of warm water."

Mr. Alan H. Robin, B.V.Sc. (Veterinary Officer of the Stock and Brands Department), in commenting on the paper, says:—"Horses will frequently lie down in stables without there being anything wrong with them. Heavy, labored breathing is often associated with acute digestive disorder, but not necessarily a sign of it. Very frequently it is due to other diseases not connected with the digestive organs. Tincture of aconite is not a safe drug for farmers to use indiscriminately in cases of inflammation of the bowels. If used, it should be used only in the very early stages to check inflammation, and not repeated 'every hour.' It has a very depressant action upon the heart, and unless used with the greatest discrimination, will have a more harmful, than beneficial, effect. It is better for the farmer to combat pain by using chloral hydrate, a safer and more efficient painkiller. Bleeding in cases of inflammation of bowels is not a practice to be indulged in by the average farmer. It requires great skill in its correct application to such cases, and if not properly applied, will be more harmful than beneficial."—[ED.]

BERRI, June 9th.—Mr. C. G. Savage (Deputy Horticultural Instructor and Manager of the Berri Orchard) gave a report of the Conference of River Murray Branches of the Agricultural Bureau, recently held at Waikerie.

BRINKLEY, June 8th.—A paper, "The Drift of the Rural Population to the Cities," was read, and a good discussion followed.

HALIDON, May 6th.—A paper, "The Drift of the Rural Population to the Cities," was read by the Hon. Secretary (Mr. L. B. Seymour). The officers were then elected for the ensuing term.

MARAMA, June 1st.—The Hon. Secretary (Mr. T. C. Hinkley) read a paper, "The Drift of the Rural Population to the Cities," and a good discussion followed.

MYPOLOGA, June 1st.—Mr. Edquist read an instructive paper, "Soils of the District," to an attendance of 18 members and two visitors.

PABILLA, May 8th.—A paper, "Horse Breeding on the Farm," was read from the *Journal of Agriculture* by Mr. G. Gregory, and an interesting discussion ensued.

WILKAWATT WOMEN'S, June 9th.—From St. John Ambulance text-book. Mrs. Pritchard prepared answers to questions. Members asked questions freely, and the text-book was referred to for replies. Such important information as what to do in cases of scalding, snakebite, accidental taking of poison, or a child swallowing match heads, was given to the meeting. Cases of accident, in which members had had personal experience, were brought forward and discussed. It was pointed out that it was a good plan for each farm house to have a definite method of summoning medical aid quickly in case of accident.

SOUTH AND HILLS DISTRICT.**BLACKHEATH.**

June 5th.—Present: nine members and visitors.

STOCK BRANDING QUERIES.—Mr. W. J. Pym contributed a paper, which was read by the Hon. Secretary (Mr. L. Pym):—There were often disputes regarding the positions of the body on which the brands should be placed on stock, he said. The positions for branding sheep were top of shoulder, near ribs or side, off ribs or side, and rump. Any person who used a brand in any other position than those registered, was liable to a penalty. No registered brand placed on sheep should be less than $\frac{3}{4}$ in. and more than $\frac{4}{4}$ in. in height. In case of a dot being used as a registered brand, it should not be less than $\frac{1}{4}$ in. or more than $\frac{2}{4}$ in. in diameter. Figures 2 to 9 could be used on any part of the sheep by an owner of a registered brand, but only one figure could be placed on one sheep unless ownership was changed. The size of the figures used must not exceed $\frac{4}{4}$ in. in height. It was necessary to exercise care in selecting oils for branding, and those harmful to wool should not be used. The colors most commonly used were black, blue, and red. Red and blue were two good colors for branding sheep in the Blackheath district. Those colors were easily distinguished in sheep with black-tipped wool. Earmarks could be used by persons having registered brands, but were not registered, and, therefore, could be used as a private mark. Sheep should be earmarked only with pliers. Earmarks should not exceed $\frac{3}{4}$ in. in length and $\frac{1}{4}$ in. in width. If a slit was used as an earmark, it could be made $\frac{1}{4}$ in. from the tip of the ear. No person was obliged to brand horses, cattle, or sheep. An animal which had not been branded could be marked in any of the six following positions:—For horses—Near shoulder, off shoulder, near quarter, off quarter, off saddle, and near saddle. Cattle—Off rump, hip, and thigh, off ribs, near rump, hip, and thigh, near ribs, near shoulder, and off shoulder. If the animal had been previously branded, the new brand should be put in the next position. No. 2 should follow No. 1, and No. 4 should follow No. 3, and No. 1 should follow No. 6. The owner could brand horses in one position and cattle in another. The owner of the last brand impressed proved ownership. The brand for horses and cattle should not be less than $\frac{1}{4}$ in. or more than $\frac{3}{4}$ in. in height.

FINNIS.

May 5th.—Present: five members.

PEA GROWING.—Mr. H. Butler read the following paper:—“Peas are more sensitive than other cereals to climatic changes, and thrive best under damp, cool conditions. In the early stages of growth in this district peas are seldom affected by frosts, and in warm dry weather they are able to make good use of

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the water reserves in the soil. They are very susceptible to hot winds, particularly if the ground requires moisture. The most critical period of growth is at the flowering stage, when frosts or hot winds will practically ruin a crop that has been sown for grain. Therefore, successful pea growing is limited to districts with moderate temperatures and rainfall. Another drawback is that they are often attacked by caterpillars which devour the grain. The expense of harvesting has, of late years, been considerably reduced on clear ground, but there is no machine that will work in stumpy or stony land. Some farmers hold the view that peas encourage weeds, particularly sorrel, but I do not agree. In fact, good heavy crops of peas in time will clean the land of sorrel. Despite these several disadvantages, there is much to be said in favor of growing peas. My chief point in favor of pea cropping is that land at the present time is far too valuable to leave out for 10 months as bare fallow when a valuable crop of peas can be grown, and at the same time replenish the supply of lime, nitrogen, and organic matter which is equally as beneficial to the following cereal crop as well-worked bare fallow. There are many ways in which peas may be utilized to advantage, and taking into account the labor necessary to clean peas for seed, &c., I favor feeding in the paddock to either sheep or pigs. With this method a large amount of humus will be distributed. It is quite reasonable to expect a 20bush. crop of peas to the acre to fatten 10 lambs, or five store pigs, putting 20lbs. on each lamb, and from 40lbs. to 50lbs. on the pigs in nine weeks. Even this year, which was by no means satisfactory from a sheep-fattening point of view, owing to the small margin between stores and fats at the time of buying, and the unexpected drop in wool, I cleared £200 from 50 acres of peas which would not have yielded more than 15bush. to the acre, and with the addition of 60 odd acres of grass land, fattened 480 sheep and lambs, and also kept 60 ewes and lambs for four months on this area. The feeding value of pea hay, cut just as the pods have formed, is very high for all stock, particularly cows in milk. This method of utilising the crop could be practised to a far greater extent, and would prove most satisfactory in the rather rare event of wholesale destruction by caterpillars. People often express the opinion that peas are not suitable for cows, ewes, or sows when in milk, but this has been proved to be incorrect, because fed in conjunction with other rations, there is nothing which produces, through milk, so much of the necessary bone and flesh producing elements, which are essential for quick healthy growth. Practically any soil in these districts is suitable for pea growing, except low-lying and wet areas, where the straw is liable to rot off, or on too rich land where too much growth is made in the straw. I favor sowing half the pea crop at the end of May or beginning of June with 2bush. peas and 100lbs. super. The remainder should be sown about the end of June with 2bush. to 2½bush. of peas and lewt. super, thereby avoiding the risk of having the whole of the crop caught at one stage by a hot wind." A good discussion followed.

MACGILLIVRAY (Average annual rainfall, 19in. to 20in.).

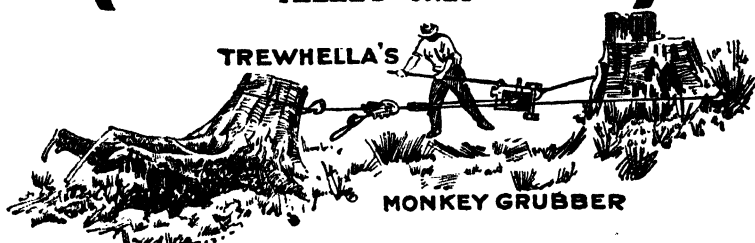
May 5th.—Present: eight members.

WORMS IN SHEEP.—The monthly meeting of the Branch was held at the residence of Mr. H. J. Nicholls. Mr. A. Brumby read a paper, in the course of which he stated that worms in sheep caused serious losses to stockowners in certain localities of the State. The most favorable situations for the pests were in low-lying flats and swampy pastures, especially if the water was fresh. Springs in the foothills and districts where there was much summer rain were also troubled with worms. When fluke was present in the flock, the symptoms were bloat, or swelling under the jaws, bloodless or pale skin, and general debility. A good preventive of the trouble was to provide the sheep with a lick of 8lbs. of sulphate of iron to lewt. of good clean salt, ground finely and well mixed in troughs. He had also found flowers of sulphur very good for fluke. It should be prepared in the proportion of 5lbs. of sulphur to lewt. of salt, and half-pint of turpentine, well mixed and set out in troughs. If possible, sheep that were affected with fluke should be shifted on to dry paddocks. The lung worm was also a serious pest of the flock; it was a very fine threadlike worm, and was found in the main pipes or tubes of the lungs. Symptoms: A hard dry cough, and in some cases swellings under the jaws. In the first stages of infestation he had often found the skin highly inflamed, which after a time became white and bloodless

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BLOOD MANURE
BONE MANURE

and the sheep often scoured badly. The most beneficial treatment was one liquid ounce of turpentine to 2ozs. of new milk, given as a drench. Grown sheep would be given the full amount and lambs half the quantity. The sheep should be yarded over night and drenched in the morning, and left in the yard four hours after. The flock should not be watered for 24 hours. Another bad worm was one which infested the first stomach. Symptoms and treatment were as follows:—Cough, swollen or flabby under jaws, black and running scours, pale skin, and the wool comes off when bad cases are handled. The best remedies are arsenical and bluestone drenches. White arsenic drench, 25 drams of arsenic, 6ozs. of washing soda, one small plug of dark tobacco, 5½galls. of water. Simmer the water, arsenic, and soda for half an hour, until the arsenic is quite dissolved; do not allow the mixture to boil. Then put the tobacco in an oatmeal bag and hang in the tin until all the strength is out of it. Be sure and make the amount of liquid up to 5½galls. so as to allow for losses by steaming. Dose of drench, full-grown sheep 2 liquid ounces, lambs 1 liquid ounce. Another good drench can be prepared as follows:—4½galls. of water, ½lb. of washing soda, 2½ozs. of arsenic, 1doz. packages of Epsom salts. When boiling, add soda first. When dissolved add arsenic, then take it away from the fire and add salt, being very careful when boiling or it will boil over when adding the arsenic. Simmer for 15 minutes, stirring all the time. Dose for full-grown sheep 1½ liquid ounces, lambs 1 ounce; 4½galls. of liquid should be in hand when mixed. If less, additional water should be added until the right quantity is in the vessel. Arsenic lick for sheep—1oz. arsenic dissolved in one quart of water and well mixed with 100lbs. of salt. Keep in covered-in troughs. Cooper sheep tablets are a splendid tonic for sheep and very good for worms. Mr. W. O'Connell supplied the following recipe:—"White arsenic, 2ozs.; washing soda, 8ozs.; ½lb. of dark tobacco, ½ pint of kerosine, ½lb. sulphur, one small bottle of eucalyptus oil, 5galls. of water. For mixing, use three-quarters of a tinful of water, put in the washing soda, and allow it to come to the boil, and when dissolved add arsenic; let it simmer for 10 minutes, then add sulphur and finely-cut tobacco, also kerosine and eucalyptus oil, simmer for half an hour. Fill up with 5galls. of water, then strain through hessian. Dose for grown sheep 2ozs., lambs (over three months) 1oz. Yard over night and leave the sheep in the yard four hours after drenching. All the above arsenical drenches have been proved as very effective for stomach and tapeworms." The tapeworm which infested some of the small intestines was another serious pest of the flock. Animals troubled with that pest often showed small swellings under the jaws and at intervals had fits of coughing similar to sheep infested with stomach worms. Remedy:—½lb. of bluestone boiled in 1gall. of water, and, when dissolved, add 4galls. of water. Dose for grown sheep 3ozs., weaners 1½ozs. Yard over night and leave in yard four hours after drenching. Every sheepowner in a country known to be infested with worms should watch his flock carefully, and at the first symptoms of them should drench the sheep without delay. Changing sheep after drenching on to fresh dry country was also advisable. Burning grass country with just enough dry grass to cause a slow fire was a splendid way of cleaning it of worms, and draining wet country and ploughing furrows through the low-lying parts to the natural watercourses also cleared a lot of worms.

MOUNT BARKER (Average annual rainfall, 30.73in.).

May 6th.—Present: 33 members.

MIXED FARMING AND FINANCIAL RESULTS.—Mr. W. T. Stephenson read the following paper:—"Mixed farming embraces the growing of various crops and grasses and keeping livestock. This class of farm life should not be monotonous, especially if good results are obtained. There is good and poor land in this locality, and it is astonishing how the land varies; sometimes a few chains separate good land from that of a medium quality. Some of the best land, if top dressed and sown to clover, rye grass, and lucerne, will carry six sheep to the acre if a portion, say 25 per cent., is reserved and cut for grass hay to tide the stock over needy periods of the year. The poorest land may not carry more than one sheep to the acre, but even if the poorest land is sown with clover and top dressed, the difference between good and bad will not be so marked. The greatest acreage will be devoted to clover, which first place it deserves, consequently far more

sheep are being kept and more cattle fattened than hitherto was the case. It does not pay to put a large area in with wheat or oats for either hay or corn, because, as a rule, the winter is too wet and cold for cultivated land, and although the land may be good, frequently the crops get an excess of moisture, which is not conducive to payable results. Whilst referring to Subterranean clover, and the market for the seed, I hope that for the good of the district the demand will be good and the price payable. There is no doubt that the fodder is a good one, and that there are thousands of acres, even in South Australia, that would be greatly benefited if planted with Subterranean clover. The price charged for this seed has been so high that it has induced many men to put in a plant and thresh seed, but like many other new ventures, the price has dropped considerably, and the supply seems to have overtaken the demand. There are hundreds of acres in this district that could be vastly improved if the land were scarified, sown with Subterranean clover, and top-dressed with 1½cwt. of super to the acre. It is sometimes argued that it is not necessary to sow the clover in this district: all that is wanted is a dressing with super and the seed will germinate. My experience is that if a paddock has not got the clover seed on it, it may gradually become established by birds and stock distributing the seed from other paddocks, but this process is too slow. By preparing a seedbed, procuring good seed, mixing with super, and drilling in at the rate of, perhaps, 10 acres per day, a good clover paddock is possible within six months if sufficient seed is sown. I sowed 30 acres of land with clover last year at the rate of 7lbs. per acre, with 2cwt. of super per acre, and 15 acres of this land were raked this year for seed, there being a good mat of clover on this portion. If a good stand of clover is to be secured the first year, increase the rate of seed as much as can be afforded, even up to 12lbs. or 14lbs. per acre. The best seed is now obtainable for about 2s. 6d. per lb. On good cultivated land it is quite possible to get 1 ton per acre of clover hay the first year if 6lbs. or 7lbs. are sown to the acre, but the results may be doubled if twice the amount of seed is used. Do not mix the seed with super until ready to sow, because the super may have a detrimental effect on the germination if left in contact with the seed for too long. Some farmers simply

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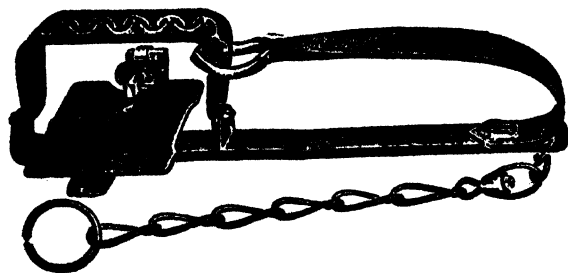
scrape or rake pods of clover from one paddock and scatter them about in another field that requires seeding. This is false economy. If the cleaned seed is obtained and mixed with super, the cost of sowing is practically nil, because as it is necessary to top dress, the two operations are done in the one. If the farmer wished to sow, say, 30 acres, and he chose the raking and spreading of pods method, his bill would come to far more than if he procured the finished article. In the one case one man would do the work in three days with a team of horses and drill. In the other, to get the same results many weeks of labor would be entailed. Perennial rye grass is a very good fodder, but it does not seem to do well in the lighter soils. On the heavier type of land, my experience is that in time it will choke out clover. It has its good points, and will readily show a nice green picking after a rain, even in the summer. It deserves a place on some of our land, and I would hesitate before destroying a good field to put in something else. Lucerne should also have its few acres. It provides green feed when natural grasses are dry. Although my paper is on mixed farming and financial results, it does not necessarily follow that I would advocate keeping various classes of stock and growing all kinds of fodders and crops. What would suit one man would not do another. If the holding is large enough, I am inclined to give sheep the most prominent place. Four or six tooth Merino wethers should bring in £1 per head clear for wool, although the price has dropped considerably. The market at present is temporarily at a standstill, but good Merino wool is in the vicinity of 2s. per lb. To do really well out of sheep, the selling price of wool should be about 2s. per lb. Some favor the breeding of lambs instead of relying on wool. Maybe this is a better proposition, although there is not so much difference between growing for wool only and breeding lambs. The ewe and lamb need better feed, the wool cheque is not so great, and the risk of mortality is increased, but probably keeping ewes and lambs would be more profitable, and certainly so if wool dropped below a certain level and lambs were a good price. Much depends on the price of the wool. Dairying.—On a mixed farm, and supposing a man kept 10 cows and did the work himself, it should be remembered that the actual milking of cows does not take one-half of the time that is required if one man has to do all that is necessary in this business. It is necessary to bring the cows into the yard morning and night, take them back to the paddock, put them into the bails, wash teats, separate, wash buckets, can, and separators, clean out bails and yards, and mend fences. If the cows are to be kept in full milking condition, green feed has to be grown for summer consumption and hay for winter. If one man did all the work it would average out at about six and a half hours per day, Sundays and holidays included, and that at 1s. 6d. per hour would come to about 10s. per day. Supposing he had these cows in for 300 days of the year, the balance, 65 days, being turned out, 300 days at 10s. per day would come to £150. There would be a proportion of rent, taxes, interest, depreciation on plant and implements to be added, and if these were added to the £150, the total would exceed £200. Members will agree that in this district 300lbs. of butter per year is more than most herds, including heifers, realise; 300lbs. at 1s. 3d. per lb. would be £19 15s. per head. Skim milk should be worth about 1½d. per gallon for feeding to pigs or calves; about £3 15s. per head would need to be added for this. The total returns would then be £23 10s. per head. Twenty pounds all told would be as much as would be obtained. Thus, we have 10 cows at £20=£200. The expenses (if 1s. 6d. per hour be allowed) would be £200, as shown previously. The position is this: if the dairy farmer had to employ labor at the minimum wage, time and half and sometimes double time, there would be a substantial loss made. Other industries stand the cost of labor, but the dairying industry will not. Why should the dairy farmer have an allowance of only 1s. 6d. per hour for his work and risk and labor? A large dairy farmer has certain advantages with milking machines, &c., but even hand milking is not one-half of the total work. Pigs.—Should a farmer keep cows, he should have pigs to consume the skim milk. In addition to the milk, pigs should have a certain amount of root fodder, rape, or lucerne, also corn or pollard. Sometimes one may do well in buying store pigs and fattening. If the market is good when the animal is ready for sale, a profit should be made; but again, it is quite possible to have to sell on a falling market, and when a pig attains a certain weight it must be sold. Breeding pigs has been more remunerative of late. A 120lbs. bacon pig should bring £5 clear. Fattening Heifers and Cows.—It is quite possible at times to buy store heifers and cows and fatten them on clover and make

a fair profit. It is also possible to buy milking cows, milk them for a while if conditions are favorable, and then dry off and fatten them. It seldom pays to rear a calf and keep it, say, until it arrives at the age of two and a half years and then sell for beef. Store heifers of two and a half years can often be bought for about £3 or £4 per head. I estimate that it actually costs between £14 and £15 to feed a heifer until she attains the age of two and a half years. The calf should have about 2½galls. of skim milk with a small quantity of calf meal added, per day. Supposing it is weaned at six months, the cost of food and looking after the calf would be 3s. per week=£3 18s. Add to this 104 weeks' paddocking at 2s.=£10 8s., makes the cost of rearing the animal to two and a half years £14 6s. A very good paddock would be needed to keep a heifer for two years without resorting to an occasional feed of hay. The breeder of Jersey cows deserves £20 per head for each two and a-half year old heifer, but would it pay to purchase at that figure, according to the average price of produce? The breeder of stud Jerseys will need more for his stock, because he has had to start with high-priced animals. Potato Growing.—Potatoes are not grown in this district to such a large extent as they were. Like many other ventures, there is the uncertainty of the market. Last year potatoes were practically unsaleable. This year they are a good price. With a six-horse team and a four-furrow plough, 20 acres could be thoroughly worked and planted for about £2 per acre. My method is to plant in rows 3ft. apart, one man sitting on the plough planting all the time, whilst another does the driving. The following balance-sheet will show what can be expected if the crop returns 4 tons to the acre and is sold straight away at £5 per ton:—*Expenses*—Ploughing, preparing and planting 20 acres of land, £40; 6 tons of imported seed, at £10 per ton, £60; 5 tons manure, at £6 per ton, £30; working between rows after potatoes are up, £10; rent and proportion rates, taxes, &c., £40; digging 80 tons at £1 per ton, £80; 1,280 bags at 6d. each, £32; sowing and carting, £25; total expenses, £317. *Returns at 4 tons to the acre*—3 tons to the acre of table-sized tubers at £5, 60 tons, £300; 1 ton to the acre small potatoes, 20 tons at £1, £20; total, £320. It will be seen that it takes a 4-ton crop and a ready sale at £5 per ton to pay expenses. It is quite

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possible to do far better. Onions, mangolds, turnips, and many other crops might be also grown. It may not always pay to grow vegetables for sale. The same will apply to keeping fowls for egg production, but fresh eggs and vegetables are valuable for home use. On a farm it is well to have shelter for stock. Hedges or breakwinds, and trees for shelter and shade, affect financial returns, besides making the farm more attractive. I have been surprised at some farmers who smoke their pipes and cigarettes on a hot day whilst working amongst inflammable produce. I have seen a man smoking a cigarette whilst feeding a clover thresher, with valuable clover and machinery in the immediate vicinity. If the 'boss' smokes while on the job, so probably do his men. There are times and places to smoke, but not amongst valuable inflammable material. Referring to bush fires at this time of the year may not seem appropriate, but during the summer one cannot be too careful. Many men enjoy a smoke and know when and where to do so, but too many are careless and selfish. I would like to see the law tightened up considerably in regard to smoking where there is danger of fire."

MOUNT PLEASANT (Average annual rainfall, 26.87in.).

May 8th.—Present: eight members and three visitors.

CARE OF SHEEP AND WOOL.—Mr. J. Miller, who read a paper dealing with this subject, said dipping was the first work to be considered. He did not advocate dipping directly off shears, because unless the ewes were in strong condition it was too severe on them. They should be allowed to go back to the paddock and recover from any knocking about they might have received during shearing or drafting operations. In suitable weather they should be yarded towards evening and dipped next day. The wool should not be allowed to make too much growth before the sheep were dipped, especially if the sheep were affected with tick and the dip was made strong on that account. After being dipped, the sheep should be given a few days' rest. In the Mount Pleasant district the ewes should be mated to rams during the first fortnight of November. Prior to mating the ewes should be yarded, and any that showed wool or conformation defects should be culled and sent to market or used for rations. The rams should also be graded, and 50 to 60 ewes allowed to each ram, according to the virility of the sire. The ram should be left with the breeding flock for at least 10 weeks. During that time it was necessary to watch for blowfly trouble. Several weeks before the ewes were due to lamb they should be thoroughly cleaned around the eyes and breach. The lambing paddock should be provided with good feed, water, and shelter. It was advisable to make a frequent inspection of the flock during lambing to assist ewes that might be in difficulties. When the majority of lambs had been dropped, a fine breezy day should be chosen for the work of tailing. If the lambs were early, they should be taken from the ewes as soon as the grass had made a fair start, say two or three weeks before shearing. He thought lambs would make better headway if they were placed in a paddock by themselves rather than mixed with older sheep. If the flock was short of ewes, he thought well-grown ewes could go to rams when "two-tooth." In all drafting or handling it was a good plan to make a point of having a pair of shears handy, so that sheep could be crutched or wool removed from their eyes. Care should be taken of all wool thus removed. In the discussion that followed, Mr. V. R. Tapscott considered that 50 or 60 ewes were too many for one ram, and that ewes should be yarded with the rams if a higher percentage of lambs was desired. Mr. Searmouth thought that ewes and rams should be put in a small paddock together for about a week before being yarded, to enable them to become accustomed to one another. Mr. Miller said it was always advisable to yard sheep and lambs some hours before tailing, in order to allow the lambs to quieten down. The opinion was general that the searing-iron was a barbarous method of tailing lambs. Mr. Royal thought that the main reason why blowflies were so troublesome was that the tails were cut off too short. Mr. Searmouth considered that about a fortnight after shearing was the best time for dipping sheep. Mr. Maitland said dipping should be done whilst the grass was fresh and green.

BALHANNAH, June 5th.—Thirty-two members attended the June meeting, when a paper, "Noxious Weeds," was contributed by Mr. H. Bollbusch. This aroused a keen discussion.

CHERRY GARDENS, June 2nd.—Thirteen members and four visitors attended the June meeting, when Mr. C. H. Beaumont (Orchard Instructor and Inspector) delivered an address, "Dust Spraying and New Methods of Controlling Orchard and Garden Pests."

CURRENCY CREEK, April 8th.—Mr. J. J. Bradford, of the Finnis Branch, delivered an address, "The Work of the Agricultural Bureau."

A further meeting was held on May 8th, when Mr. A. Carter, of the Finnis Branch, read a paper, "Mixed Farming," and an instructive discussion followed.

CURRENCY CREEK, June 5th.—The Hon. Secretary (Mr. D. J. Gordon) read a paper, "The Drift of the Rural Population to the Cities," and an interesting discussion ensued.

IRONBANK, June 5th.—A discussion took place on "Spraying for Codlin Moth," and it was agreed that better results could be obtained by using more arsenate of lead than recommended by manufacturers. Mr. G. Pole stated that for the last five years he had been using 50 per cent. above the prescribed amount, and during that period his apples had been 99 per cent. free from codlin.

LENSWOOD AND FOREST RANGE, June 8th.—A paper was read by Mr. G. Schultz, jun., in which he gave an account of his experiences along the River Murray during the fruit-picking season. The Hon. Secretary (Mr. A. T. George) also read a paper detailing a visit he had paid to a commercial poultry run and the "Amacol" butter factory in Adelaide.

SHOAL BAY, June 9th.—The subject, "Coast Disease in Sheep," was again brought forward, and it was decided to seek the co-operation of the veterinary officers of the Stock and Brands Department in an attempt that was to be made to find a remedy for the disease.

TWEEDVALE, May 7th.—Forty-two members and five visitors attended the May meeting, when the Hon. Secretary (Mr. Otto Sickerdick) read a paper, "The Drift of the Rural Population to the Cities."

TWEEDVALE, June 4th.—Forty-three members and six visitors attended the June meeting, when a paper, "Power Farming," was read by Messrs. H. Pillar and A. W. Reuter. An interesting discussion followed.

SOUTH-EAST DISTRICT.

ALLANDALE EAST.

June 5th.—Present: nine members.

THE NOXIOUS WEEDS ACT.—Mr. W. Laslett, in addressing the meeting on this subject, said noxious weeds legislation was not satisfactory in enforcing the eradication of weeds. It would be better if power were given to district councils

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to declare a weed "noxious" when it was thought such a weed would be a menace to a district, then, when a new weed appeared, the district council could see that landholders exterminated the weed. Under the Act stinkwort was not declared a noxious weed, because it would ruin many landholders in the northern areas if it were declared noxious. Stinkwort was not known in the South-East a few years ago, and now it had assumed a serious aspect. There was a new weed of the squash or prickly melon variety that resembled the kangaroo apple, which was locally becoming a pest, and not being declared noxious, was spreading rapidly. It had long roots and was a soil robber. The district council eradicated several patches, and for a time its progress was checked, but it was showing up more plentifully than ever. If the council had power, they could eradicate all such new noxious weeds. An Act applying universally was not a practical one; Weed Acts should be localised to specified districts. Mr. A. Kieselbach asked, "Would Government be compelled to eradicate noxious weeds on Crown lands?" Mr. Laslett thought the Government would co-operate with settlers. Mr. A. Kieselbach said the Government did not kill rabbits on Crown lands, yet other landholders were compelled to do so, and it would probably be the same with weeds. Mr. M. McCabe said stinkwort in rough country could not be eradicated without undue hardships to settlers. Mr. C. Griffin said stinkwort had now spread over a very large area, and it was beyond extermination. Mr. W. Laslett said if stinkwort were attacked locally, a few years ago, the district would now be practically free. It should have been declared noxious in the lower South-East. Mr. C. Griffin said rabbits carried burrs and distributed weed-seeds. Mr. A. Kieselbach said birds also carried and spread small seeds. Mr. M. Sewart thought sheep the worst carriers of seeds of weeds. Mr. B. Carlin said fox weed was becoming a very bad weed in the district. Mr. W. Laslett said the important point to be considered was not so much the destruction of weeds at present in evidence, but rather those that would soon spread if precautions were not taken.

TANTANOOLA.

June 6th.—Present: 11 members.

DEPTH OF SOWING OATS.—Mr. J. Lane read a short extract dealing with this subject, and in the discussion that followed it was generally agreed that 1½ in. to 2 in. suited the heavy lands of the Tantanoola district. On the lighter soils of Glencoe and Mount Gambier a little deeper was preferable; but if there was plenty of moisture in the soil, a little deeper on heavy lands was not harmful.

STARLING PEST.—Mr. Haines read an article in which reference was made to the value of the starling as a destroyer of grasshoppers. There was a general agreement in favor of the bird as an insect destroyer, but members thought it very severe on fruit in a dry season when its natural food was short.

GROWING PINE TREES.—Mr. T. Edgcumb, in the course of a short dissertation on this subject, said for timber on light land there was no doubt that the Remarkable pine was the best, but they would not grow on the black flats unless they had a bed made for them in a hole filled with sand. The Aleppo pine was much better for the black flats where shelter was required. It was a mistake to plant pines from the nursery in June, in their permanent position. The better plan was to plant them in a garden where they could get plenty of attention and water if required, and then set them out in permanent positions the following May. If that was carefully done, there would be a 100 per cent. "strike." To keep hares from the young trees, it was a good plan to make 2 galls. of whitewash and boil ¼ a pint of Stockholm tar in it and splash it on the young trees. In reply to Mr. Lane, who said he had succeeded with pines planted in August, Mr. Edgcumb said it was better to plant in August than in June; if the plants could be got from the nursery in May, it would be all right. Mr. Smith detailed the method of planting in the forest, where the success of the operation appeared in the puddling the plants in clay batter.

THE SPARROW PEST.—Mr. Edgcumb called attention to the sparrow pest.

The Hon. Secretary (Mr. B. Campbell) then read an extract from an American bulletin dealing with the correct method of applying fertilisers to the soil.

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THE AGRICULTURAL BUREAU.—Particulars of this Organization, of which every farmer should be a member, can be had on application to the Department.

TATIARA (Average annual rainfall, 19in.).

June 18th.—Present: nine members.

FENCING.—Good posts of well-seasoned gum, 5ft. 2in. in length, and about 20 sq. in. at the small end, were recommended by Mr. W. Butler in a paper dealing with the subject of "Fencing." Well-seasoned strainers 10in. or more in diameter at the small end, and of different lengths, should be used. Those in the fence line should be 6ft. 2in., and those at corners should be a few inches longer, and the gate posts still a few inches longer. Posts should be placed 20in. in the ground, strainers in line 2ft. 8in., corner posts 3ft., and gate posts 3ft. 6in. The fence should be 3ft. 6in. high. Before carting the posts on the line, it was advisable to level the ground with a plough and scoop, or a leveller. That would prevent any trouble with creeping sheep. Posts should be about 10ft. apart if timber was plentiful. Such a fence would be more serviceable than if droppers were used. Six wires should be put in the fence, to make an efficient, lasting job. The bottom wire should be 5in. from the ground, and the next the same distance from the bottom wire, the third 6in., the fourth 7in., and the fifth 8in., the top (a barb) 10in., thus making the fence 3ft. 6in. high. Against every strainer there should be substantial stays, one end being about a foot above the ground, and the other sunk in the ground. Strainers should be 5 chains apart, and gateways 18ft. wide, thus leaving room for a team of horses and large implements to pass through easily. Double gates were always preferable to single, because there was less strain on the gate posts. In discussing the paper, Mr. H. Fisher said the levelling of the land was a good suggestion. He preferred galvanized wire for fencing, and recommended separate gate posts where gates were used frequently. Mr. A. E. Milne said bull-oak droppers, with posts 24ft. apart, made a very serviceable fence. He thought the fence should be 3ft. 8in. high. Wooden gates were more durable than some of the iron gates on the market. Mr. E. Fisher pointed out that iron droppers would not be affected by fire.

NARACOOORTE, April 18th.—Mr. V. W. Gould read a paper, "Useful Articles Made from Waste." Mr. S. H. Schinckel referred to the many old things lying about a farm yard, such as machinery and old bedsteads, which could be utilised for odd jobs. He described how an old iron bedstead could be made into a useful ladder. Old iron bedsteads could also be utilised for struts in scrub-country fences.

NARACOOORTE, May 9th.—The subject, "Clover Seed Sowing," was introduced for discussion. Mr. E. S. Alcock, Assistant Farm Manager, Kybybolite, considered that the best plan was to broadcast the seed after drilling in the crop. Mr. W. E. Rogers said he sowed the seed soon after the crop was put in, and it did very well. He used a small seed-sower without super.

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